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*Vol. 66 no. 17*

# MANUFACTURERS RECORD

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A Weekly Newspaper Devoted to the Industrial, Financial, Railroad,  
Mining, Contracting, Engineering, Building, and General  
Business Interests of the South and Southwest

Vol. 66  
No. 1

ESTABLISHED 1882

\$4.00 Per Year  
Single Copy 15 Cents

## In This Issue:

Three Great Conventions of Importance to  
the South.

Twenty Years in the Fertilizer Industry.

Making Aluminum in East Tennessee.

Potentialities of Louisiana's Wet Lands.

Alphabetical Index, Page 106.  
Classified Index, Pages 100 to 105.  
Classified Opportunities, Pages 66 and 67.

BALTIMORE, JULY 9, 1914

# CLINCHFIELD COAL

**CLEAN**



**LUMPY**

"NEVER SHORT OF CARS"

MINED BY  
**Clinchfield Coal Corporation**  
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**Clinchfield Fuel Company**  
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**To Do Your Foot Press Work  
at Less Cost Use**



## Bliss No. 8 Bench Press

particularly adapted to take the place of foot presses, is used for small-hole punching, blanking, forming, etc., in the manufacture of burners, small metal goods, light jewelry work, etc. Send for description.

"Bliss Presses for Every Purpose."

**E. W. BLISS CO.**

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Representatives for Chicago and Vicinity:  
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*America's Leading Mill Builders*



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N. & M. Co. Upright Bran and Ships Dusters thoroughly cleanse bran and ships stock of all usable material. The product is of excellent quality and contains the maximum of good, sharp material. See Catalog No. 922. It's yours for the asking.

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Manufacturers of FLOUR AND CORN MILL MACHINERY, WOOD SPLIT AND IRON PULLEYS, RING OIL HANGERS, COUPLINGS, GEARINGS, COLLARS, Etc.  
Shafting, Belting, Mill and Elevator Supplies in Stock  
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Completely Equipped Foundry and Machine Shop — Improved Cotton Handling Machinery  
Steam and Gasoline Engines, Boilers, Ginning Machinery, Saw Mills  
and Woodworking Machinery. Gibbs Edgers, Gibbs Shingle Machines, Swing Saws, etc. Corn Mills, Brickmaking Machinery and Machinery Generally. Electric Light Plants for Municipalities, Hotels, Farms, Homes, etc. Storage Batteries.  
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GIBBS MACHINERY CO., Inc.

Write for Catalogs.  
COLUMBIA, S. C.

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Very strong and easy handling. Balanced so that practically all the load is carried over the wheels. Dumps forward and stands on end, saving room. Capacity 5 cubic feet.

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No. 94



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Eureka Hose gives protection, it stands the crucial test of hard service.

Eureka Hose has a record of longer continually used hose than any hose on the market.

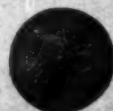
Send for new Catalogue just out.

Eureka Fire Hose Mfg. Co. . . . New York

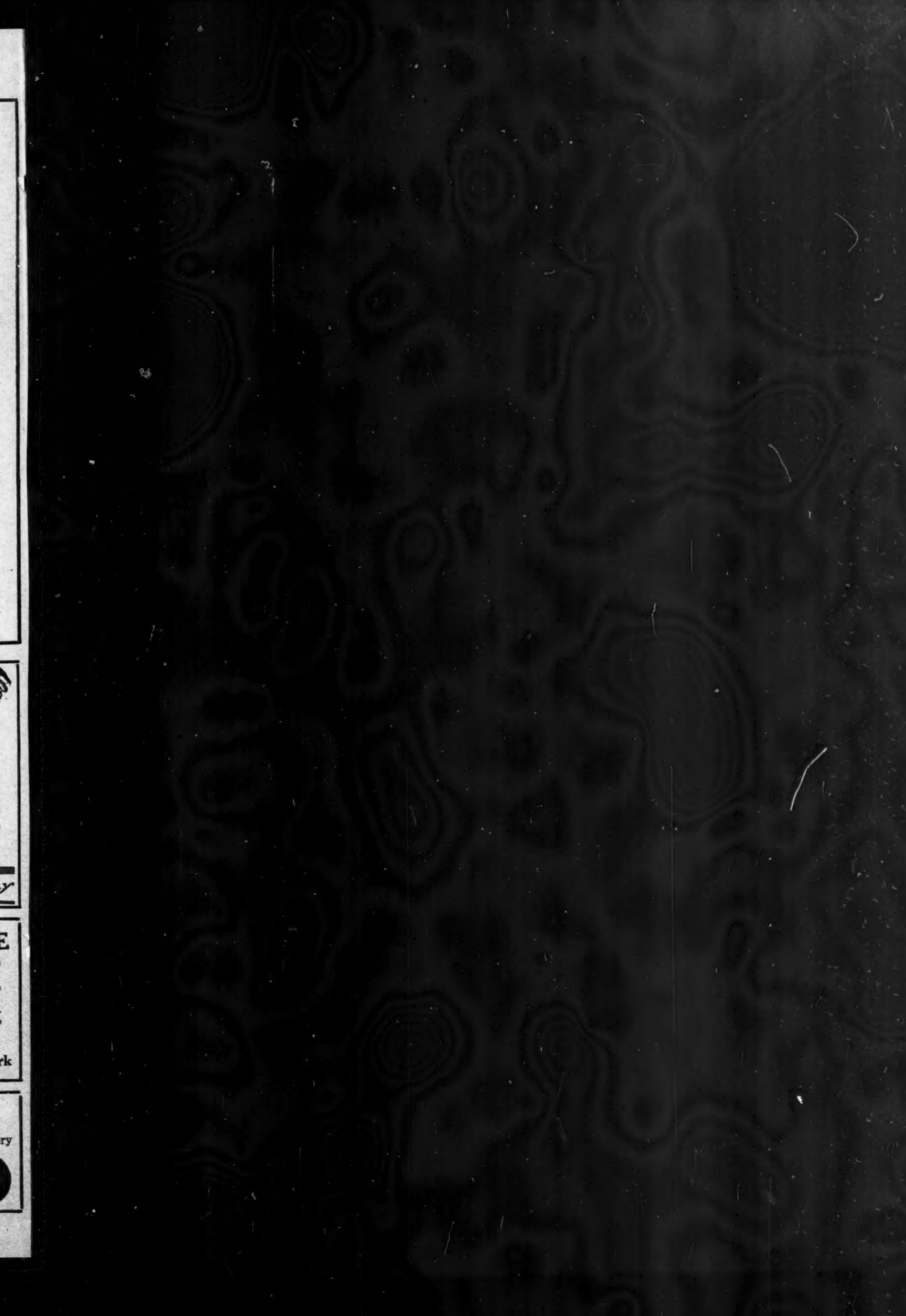
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Our successful experience in building special machinery covers a broad and varied field. Have you anything special to build that you would like prices on?

THE WOLF COMPANY, Chambersburg, Pa.







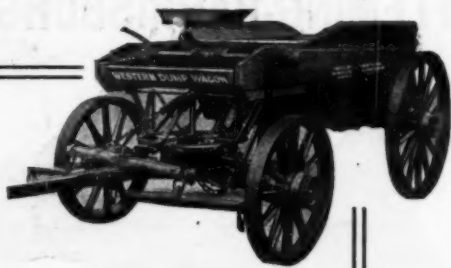
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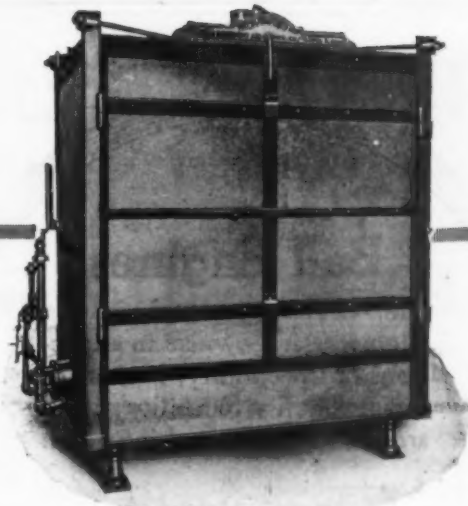
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solve the hauling problem of the up-to-date contractor. With Westerns you can haul more material with fewer teams. They are built for speed Light but strong enough to stand the hardest strain and continuous work. Close coupled. Ample opening for discharge of load. Reinforced wherever the strain comes.

Get our catalog before buying any dump wagons.

**WESTERN WHEELED SCRAPER CO.**  
AURORA, ILLINOIS

**EARTH AND STONE HANDLING MACHINERY**



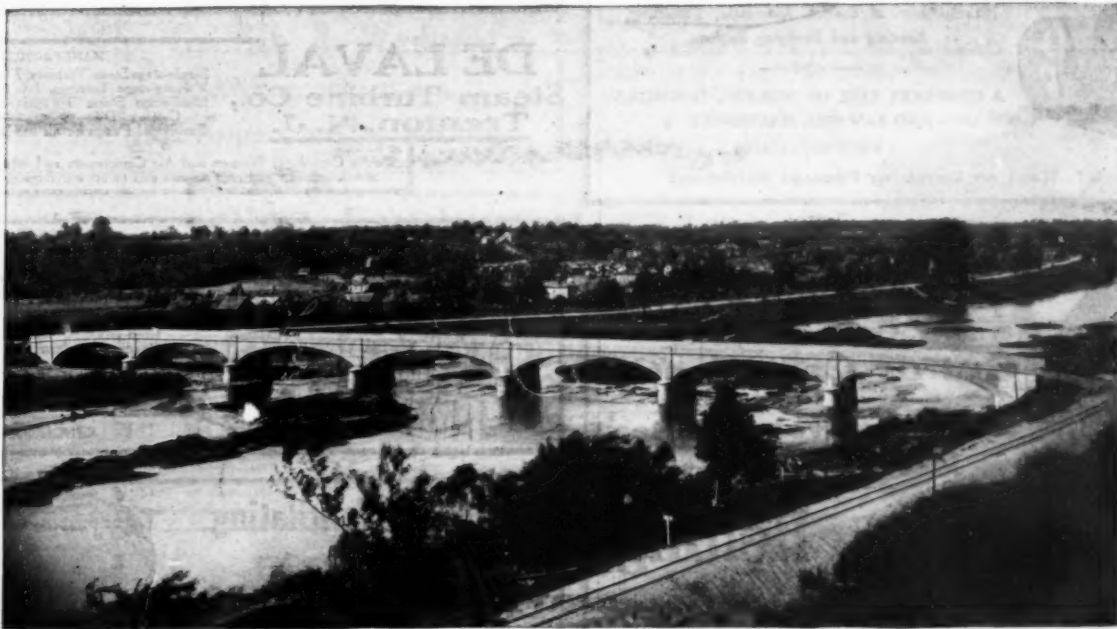
## Highly Efficient Insulation + Enclosed Flame Gas Burners + Specialized Engineering Design = CRAWFORD Sectional Ovens


Best for bluing, japanning, enameling, lacquering, baking and drying. Illustrated and described in our catalog M, which we will be pleased to send at your request. Do it now!

**The Oven Equipment &  
Manufacturing Co.**

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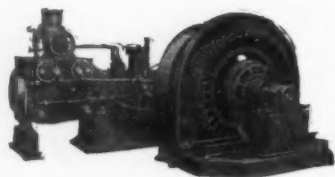
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Designing engineers are never prosecuted under the Luten Patents except when they oppose authorized Luten Designs for their own infringing plans.

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The choice of discriminating engineers and owners in all sections of the country, because of their economy, reliability and all around faculty of **making good**.

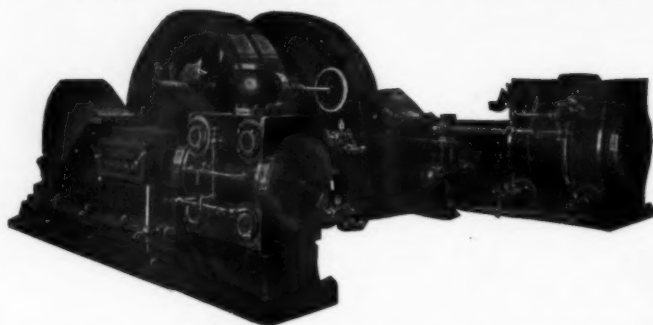


**BUILT IN VARIOUS TYPES:**

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**Ball Engine Company Erie, Pa.**

## FLEMING-HARRISBURG ENGINES

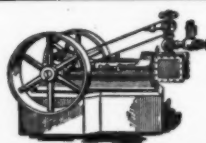


**Harrisburg Foundry & Machine Works, Harrisburg, Pa.**

BALTIMORE OFFICE  
Continental Bldg.

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NEW ORLEANS OFFICE  
Hennen Bldg.



## Schofield Engines GUARANTEED For Heavy Duty

From **FACTORY TO YOU**

If you are looking for an engine to withstand heavy duty—an engine that is well adapted for the saw mill, oil mill and the cotton ginnery, or wherever an engine can be used to advantage—investigate the **Schofield Engine**.

**Long Wear—Less Steam**

In wearing qualities and the economy of steam, the Schofield Engine is unsurpassed. Sixty-seven years of experience has enabled us to produce the highest quality and type of engine—and one we can fully guarantee. All sizes, Center Crank type—12 horse power to 100 horse power—side crank type 50 horse power to 150 horse power.

We also manufacture boilers, tanks, towers, smoke stacks, saw mills, and all kinds of machinery—mill supplies, pipe, galvanized roofing, etc. Write today for prices and catalogue containing illustrations and specifications.

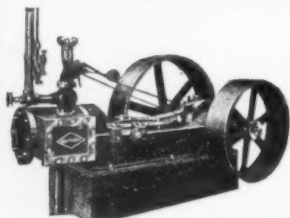
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**TANKS and TOWERS,  
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a Specialty.**

## SOUTHERN ENGINE & BOILER WORKS

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INCORPORATED 1884



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A COMPLETE LINE OF BOILERS, SAWMILLS  
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## IDEAL HIGH ECONOMY STEAM ENGINES

INCREASE DIVIDENDS

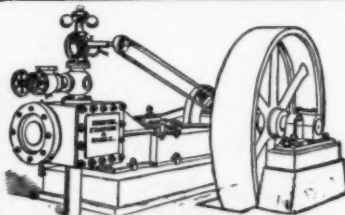
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Established 1870. Write for catalogue and economy tests.

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Also Centrifugal Blowers and Air Compressors and other centrifugal machinery. State conditions and requirements and secure our recommendations.



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We build a larger number of this type than anyone else in America. Shaft Governor Engines.

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**The Houston Stanwood & Gamble Co.**  
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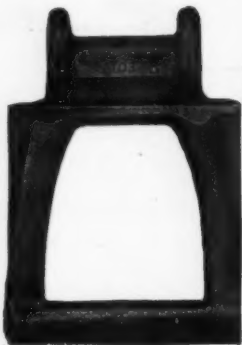
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**Chain Belting**

Pulleys—Bearings—Fly Wheels  
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Conveyors—Elevator Casings  
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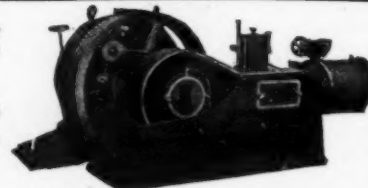
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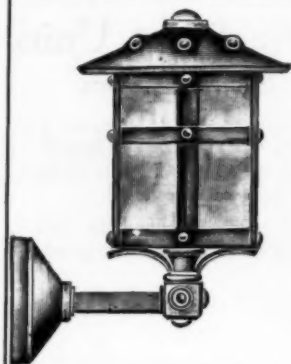
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## OIL ENGINES

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Install fixtures that are original in design. There's nothing that adds more to the "Home Beautiful" than good fixtures.

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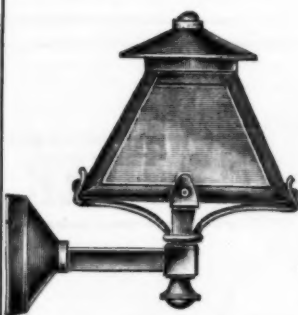
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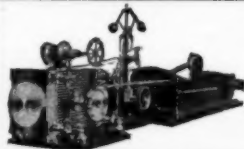
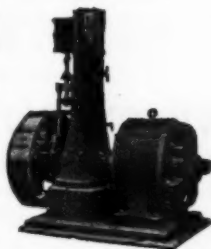
## HERE'S LIGHT FOR YOU

No matter where you live. Light your home or factory with our small direct connected

### GENERATING SETS

Built Compact and Sturdy. All sizes from 4 to 25 K. W. Get full details.

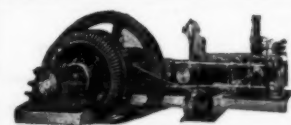
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CINCINNATI, OHIO



## The Griffith & Wedge Co.

Established 1840  
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Manufacturers of  
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Send for Catalogue.



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Boilers of All Styles and Sizes

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Engine on Exhibition in the Bourse, Philadelphia, Pa.

## The C. & G. Cooper Co. Mt. Vernon, Ohio ENGINE BUILDERS

**CORLISS ENGINES**  
50 to 10,000 H. P.

81 Years of Experience

**GAS ENGINES**  
200 to 3000 H. P.

## "EVERYTHING FOR A GAS PLANT"

Gas Holders, coal gas or water gas apparatus, valves, tanks, and all auxiliary equipment.

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A Laminated Insulating Material of Highest Efficiency  
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## Power and Electrical Machinery

Steam Turbines  
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Electric Generators  
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Combined contracts for complete power units with undivided responsibility insure satisfactory service

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## The Snow Oil Engine is best for all grades of oil fuel

Fully described in Bulletin No. S110-29, which will be sent you on request. You will be particularly interested in what we have to say regarding the advantages of this type of engine on page 5 of Bulletin.

Here are a few of its good points:

It will reduce your power bill; It is simplicity itself; Its service is reliable; There is no smoke; No auxiliaries are required.



50 to 1500 H. P.

## The Snow Steam Pump Works

Works: Buffalo, N. Y.

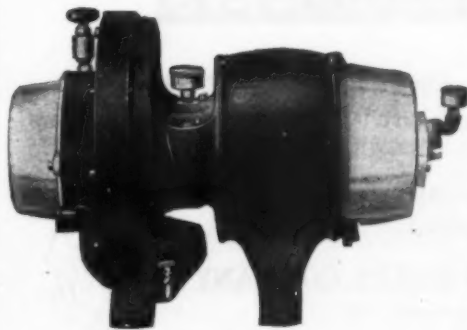
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## A PORTABLE ELECTRIC LIGHT PLANT

Weights 290 pounds. Floor Space 18x28". Generates 1 K. W.



Steam turbine direct connected to generator.

Operates 35 16 c. p. tungsten incandescent lamps.

Requires 75 pounds steam pressure.

This is an ideal outfit for isolated places, such as oil wells, lumber camps, etc. Blue prints and instructions supplied.

We also make a 1/2 K. W. size.

Write for Circular.

**SCHROEDER ELECTRIC CO., EVANSVILLE, IND.**

## The Cheapest Light In the World

For Factory and Large Area Illumination

### "Excello-Duplex"



#### INTENSE FLAMING ARCS THE REAL LAMPS

These real lamps are distinguished by long burning hours, no carbon waste, no complications, low initial and low maintenance costs. Perfect light distribution and entire freedom from flickering.

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### KOERTING & MATHIESEN CO.

SOLE MANUFACTURERS

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## If You Use Small Motors, It Will Pay To Give Robbins & Myers Motors A Trial



Robbins & Myers Motors are made in a factory which specializes on small motors. By making small sizes only, this company can give better value in small motors than would be possible if we were dividing our efforts between several sizes and types.

**Robbins & Myers  
STANDARD Motors**

Wherever you have a wheel to turn, if it requires anything from 1-60 to 15 H. P. to turn it, there is a Robbins & Myers motor that will do the work with maximum efficiency.

Consult us for information of any kind on your small motor problems.

**THE ROBBINS & MYERS COMPANY**  
Springfield, O.

The world's largest exclusive manufacturers of small motors,  
1-60 to 15 horse-power D. C. and 1-60 to 1 horse-power A. C.



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These new electric lighting and power plant units are simple, compact, easy to install and operate. They consist of a "Hyray-Exide" Battery of 16 cells in rubber jars (charged) and a simple switchboard, both securely mounted on a skid so as to be easily handled and quickly installed.

These "Hyray-Exide" Units have very much simplified the electric lighting plant proposition. They are just the thing for districts where Central Station current is not available.

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### THE ELECTRIC STORAGE BATTERY CO.

New York  
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PHILADELPHIA, PA.

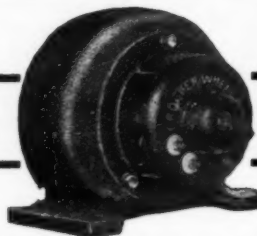
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## POWER

### The Economical and Efficient Power

The 20th Century method of operating your machines, etc. But it is important that you have the right kind of motor. Write us. We are specialists. We carry a complete line of Electrical Equipment, Fans, Motors, Fixtures, Lamps, etc.

Get our prices; they will interest you.

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## ALUMINUM

Feeder Cable Bare and Insulated  
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FOR

EXCEPTIONALLY LONG SPANS

**ALUMINUM CO. OF AMERICA**

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CURLING IRONS

HEATING APPARATUS

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## THE CASEY-HEDGES CO., Chattanooga, Tenn.

Water Tube  
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Special Plate and Tank Work. Offices—No. 443 Bolivar Street, New Orleans, La.; Prastorian Bldg.,  
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Pumps, Heaters, Injectors, Engine Supplies, and Repairs for Mills, Hotels, Public Works. Try

LOMBARD IRON WORKS

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**Wm. Sellers & Co., Inc.**  
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FIRE EXTINGUISHER**

Can be attached to Locomotive.

**SELF-ACTING INJECTOR** The only Injector for Lumber Mills and Logging Roads**Chief Advantages of the  
VOGT  
WATER TUBE BOILER**

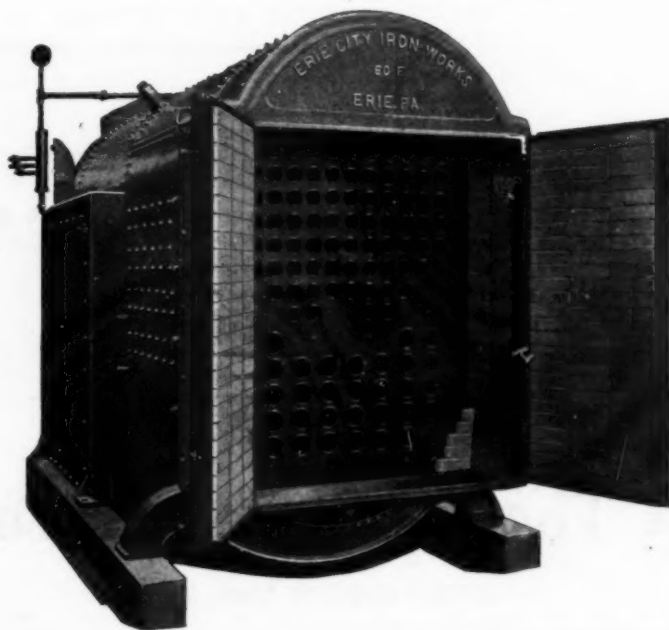
No flat stayed surfaces; no curved tubes; no multitude of hand hole plates; accessibility for cleaning and inspection; rapid circulation, both of water inside of tubes, as well as of the hot gases outside of tubes; complete combustion; dry steam; steadiness of Water Level; flexibility of construction; wrought steel construction throughout; safety, efficiency, durability.

Meets the demand for strictly safe, durable and efficient steam producer.

We want to answer your questions and also send our illustrated Catalogue.

**Henry Vogt Machine Company**  
Louisville, Ky.**When You Need a Boiler  
in a Hurry**

and a "shut-down" will mean lost money, wire for an "Economic" Boiler. It will answer your purpose exactly and you know you are getting a safe and reliable boiler. A Boiler that will stand long and continuous service.

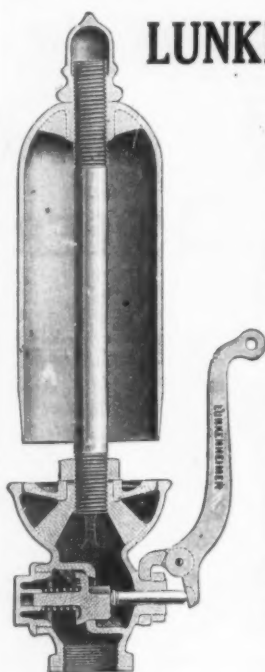
**"ECONOMIC" BOILER**

is easily installed. It reaches your plant on skids—ready to be placed on a simple foundation—ready to generate steam as soon as pipe and flue connections are made. Requires no brick setting.

*Catalog free upon request.***Erie City Iron Works**  
ERIE, PENNA.**BUILDERS OF**

Highspeed, Automatic Side and Center Crank Engines. Horizontal and Vertical Water Tube and Return Tubular Boilers. Feed Water Heaters. The "Lantz" Engine.

**"THE LOWEST PRICE NEVER YET BOUGHT THE HIGHEST QUALITY"**



## LUNKENHEIMER Whistles

Plain, Single Bell Chime, Variable Sound, Electrically Operated, Three Whistle Chime, etc., made in all standard sizes.

The large and complete line of Lunkenheim Products also includes Bronze and Iron Body Bronze Mounted Globe, Angle, Cross, Check, Throttle, Gate, Non-return Boiler Stop, Lever, Pop Safety, Relief, Blow-off, Screw Down Check Valves, etc.; "Puddled" Semi-steel and Cast Steel Valves of all types; Water Columns, Gauges and other Boiler Mountings; Ground Key Work of all descriptions; Injectors and Ejectors; Lubricators and Lubricating Devices; Oil Pumps, Oil and Grease Cups; Gasoline Engine Specialties, etc.

Your local dealer can furnish them; if not, write us.

A complete description of the entire line can be had by referring to Lunkenheim No. 50 Catalogue. Write for a copy.

## THE LUNKENHEIMER CO.

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Largest Manufacturers of High Grade Engineering Specialties in the World.

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## POWELL VALVES

(Especially The White Star Valve)

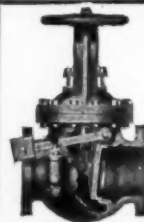
## High Pressure Globe Valves

for 250 pounds made in sizes 2" to 10", inclusive.

Screwed and Flanged Ends.

THE WM. POWELL CO.  
DEPENDABLE ENGINEERING SPECIALTIES  
CINCINNATI, O.

Ask your dealer for "Powell" Valves or write us.



Pittsburgh Valve, Foundry & Construction Co.  
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Designers, Manufacturers and Erectors Complete Steam, Air, Gas, Water and Hydraulic Piping Systems.  
PIPE BENDING A SPECIALTY



ATWOOD

## HARTLEY BOILER WORKS BUILDERS OF HIGH GRADE BOILERS

Stand Pipes, Self-Supporting Stacks, Tanks, Towers, all kinds of Structural and Plate Iron Work, Boiler Fronts, Grate Bars, all kinds of Castings.  
MONTGOMERY, ALA.

# ARE YOUR FUEL BILLS TOO LARGE?

Are your boilers at their highest possible efficiency?

READ THIS LETTER

BIRMINGHAM RAILWAY LIGHT & POWER CO.  
Birmingham, Ala., June 22, 1912  
Superintendent Gas Department  
Subject  
Thomas Grate Bar Company  
Birmingham, Ala.  
Gentlemen:  
We have been using your grate bars for the past thirty days burning a mixture of coke and coke breeze. Since installing your bars we have dispensed with forced draft, and I would say we are getting 15 per cent increase with less fuel since we only have to clean the fire about one-half as many times as previously.  
Yours truly,  
L. G. Greer, Supt. Gas Dept.

Are you Burning ALL your Coal?

READ THIS LETTER

# Thomas Elliptic Grate Bars

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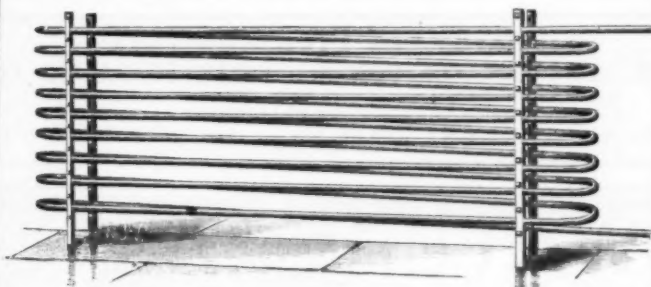
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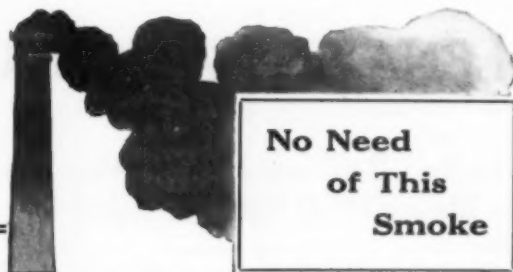


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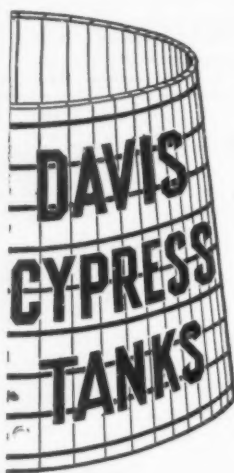
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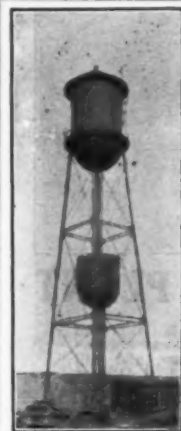
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Our "come-back" business is a big business in itself and positively proves we have given a big value.

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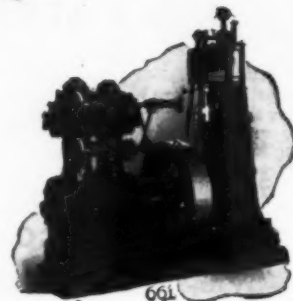


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It gives complete information about all Link-Belt Standard Wagon Loaders with full specifications and net prices, a list of wagon loader users, and many expressions of opinion from coal companies throughout the country.

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have long been noted for their superiority in design and excellence of material.

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Have you a rope drive which starts in the engine-room, goes through the wall, and carries power through the open air to a factory half a block away? Such an outdoor drive causes no operating difficulties if you use

### AMERICAN TRANSMISSION ROPE

The Transmission Rope made with internal, self-distributing lubricant, which working to the surface everywhere, protects and preserves it in the extremes of heat or cold—through rain or snow. No external dressing need be applied—no care required—expense and trouble done away with. This lubricant acts as a preventive of internal fiber friction—the rubbing of yarn upon yarn that wears away any rope not so protected.

#### Write for this FREE Book

Upon request on your business letterhead we will be glad to send you our "Blue Book of Rope Transmission." It contains much practical information and many helpful suggestions for transmission rope users.

We Ship Without Delay—on Telegram if Necessary from either point of manufacture.

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ALL PLYMOUTH Rope Goes Through Rigid Inspection

## Tests of Plymouth Manila Rope

Give you the assurance of uniformly high tensile strength. A pull of 45,000 pounds failed to snap this 7 1/2-inch rope, even though this size is only expected to stand a strain of 43,000 pounds.

The PLYMOUTH method of making rope leaves no loop-hole for imperfect or uneven places—it is assurance against "weak spots." Give PLYMOUTH any test you like—it will always hold good. Every penny invested in ship trade-marked rope is a penny well spent.



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**Office to Rent**  
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Floor Space  
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**Advantages**  
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City office being offered to new business buildings, no matter how small, will be divided to suit. When Otis high-speed elevators being installed. Modern design.

Some principal offices within easy reach of building. These elevated cars, Brooklyn Bridge, Manhattan, Governor's and Bridge within easy reach. Present Subway (and two subways under construction) within easy reach. Building Ten, 10th and N. J. River to a business center.

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If buildings of some years standing find an antidote to the inroads of new buildings in installing and advertising Otis Elevators, there can hardly be any hesitation as to the kind of elevators for every new building—

## Otis Elevators

It is important for a building to have Otis Elevators because of the universal trust people justly place in them—a trust that is certain to influence their choice of both business and home quarters.

*This rule applies not only to the loftiest and finest buildings. Any building that is large enough to have Elevators at all, is large enough to have Otis Elevators. And no equipment will do more to make a Building a profitable investment than an equipment of Otis Elevators—a factor which should count with the Architect as well as the Owner.*

### Otis Elevator Company

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Offices in All Principal Cities of the World

## Other belts are guaranteed "as good as LEVIATHAN and ANACONDA"

Here is a strong reason why you should buy the original, and it means dollars to you. Let us show you.

### Main Belting Company

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NEW YORK

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PITTSBURGH  
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**WE** want thinkers and investigators to try Schieren's Duxbak Waterproof Leather Belting—

For this class of men—the sort that get right down into the vitals of things—are the ones who finally decide to use Duxbak.

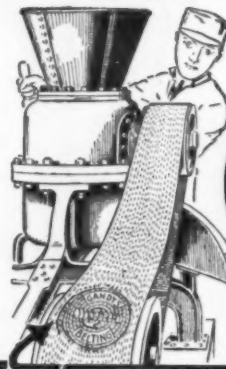


*Chas. J. Schieren Company*  
ESTABLISHED 1888

Tanners, Belt Manufacturers, Ferry St., N. Y.

Harwood R. Hall, Southern Sales Agent, 20 Shore St., Petersburg, Va.

## The Best Belt for Crusher Service



# GANDY



### COTTON DUCK BELTING

There are few situations where the actual worth of a belt is given a more severe test than in stone-crusher service—where it is constantly subjected to the wearing action of stone dust and grit.

The following extract from a letter of the Washington Asphalt Block & Tile Co. should therefore have significance, no matter for what service you require belts. They say:

"We have now a Gandy 8-ply belt, crossed, on a stone crusher for one year, and after taking it off the machine have used it in another place with excellent results. The life of a leather belt in the same place was three months, the stone dust wearing it bevelled on one side, rendering the belt worthless. The Gandy Belt is the best belt we have ever used for stone crushing, and I am sure it will take the place of any belt made, in any place."

The Gandy Belt is equally successful for driving, elevating or conveying, etc. Samples, booklet and complete information sent without obligation. Write for it today.

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MANUFACTURED BY

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## SPARTAN Steamproof Leather Belting

All that its name implies and then some—the ONE belt for hard and unusual drives—the harder the better. Send for Spartan Booklet—we can interest you if you will let us.

**The Graton & Knight Mfg. Co.**  
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## T. B. WOODS SONS CO., CHAMBERSBURG, PA.

Manufacturing Engineers

**Modern and Approved Appliances for  
the Transmission of Power**

Upon request, our new and complete Catalog No. 55 will be mailed promptly to any user of power.





## WE WOULD BE A MILLIONAIRE IF WE WERE A YOUNG FELLER JUST OUT OF COLLEGE

We would like to have a nice home, a high standing, many friends and all the nice and pleasant things at the command of a GOOD MAN who has clean money.

We would get our million by mastering or near-mastering the Steel and Iron Business.

In no other business is there such an opportunity for the Honest, Serious, Determined, Self-denying, Gentlemanly, High-Character young graduate.

There is many an "Old Man" who would just love to have a feller like that next to him right now. Wouldn't you, Governor?

But, alas! there is only one in a hundred. The rest smoke cigarettes, run the theaters, haunt the Onyx-Mahogany and only do enough work to just "get by."

Don't catch those fellers burning the midnight juice

**"Hook 'er to the Biler"**

studying up on Electrical Furnaces, By-Product Coke Ovens, Gas Engines, Finance, and how to swing Big Capital.

If I was the young feller just out of college I would begin down at the dirty old steel plant, or out in the mill, and I would study to be that hundredth man.

I would keep my eye on that Competency.

And I would be just as sure of arriving there as I would be sure of arriving at spectacled and grizzly and happy two-score and ten.

Dear me! I started out to write a Steam-Hydraulic Elevator advertisement, and here I am at the end of my space with nothing said about this wonderful machine.

We can say this, however: Any young feller smart enough to take Old Uncle Billy's advice when he is the underling will, when he comes to be "the Main Guy," most surely

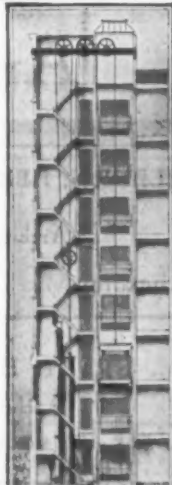


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Over 1000  
in Daily Use



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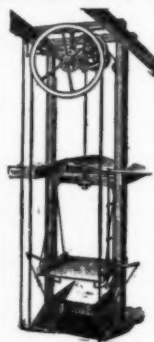
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FULL AND SEMI-AUTOMATIC  
**ELEVATOR GATES**  
STANDARD TIN CLAD  
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SHUTTERS AND HARDWARE  
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HAND, BELT AND ELECTRIC FREIGHT  
**ELEVATORS**



Our hand power machines have iron frames, and all shafts run in roller bearings, insuring DURABILITY and EASY RUNNING. Make floor space of upper stories available at small cost.

Dumb-Waiters  
Pavement Lifts

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READING, PA.  
Write for catalog

**\$84.50 Buys**  
**A 4x4 Hand-Power Elevator**  
Get our prices on other sizes  
Decatur Foundry Furnace & Machine Co.  
Decatur, Indiana

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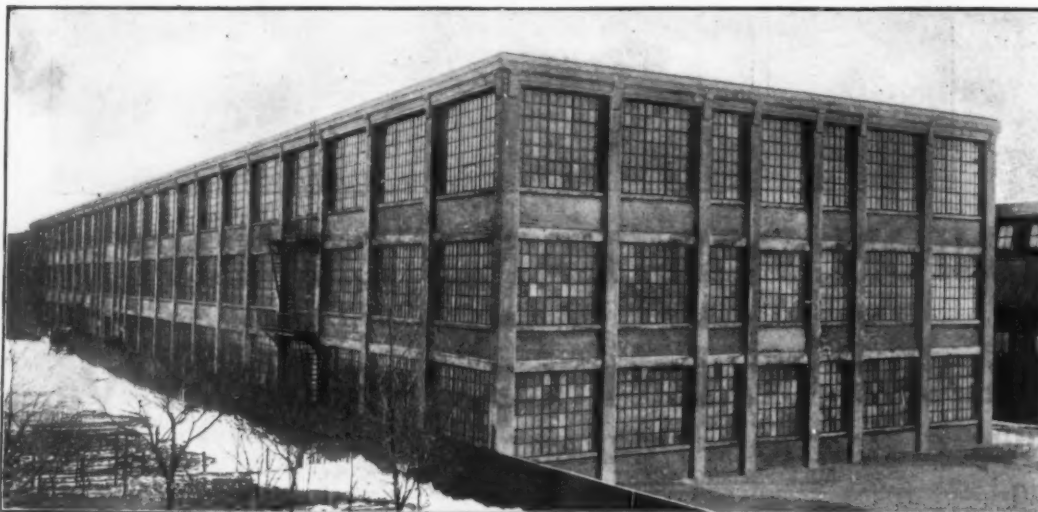
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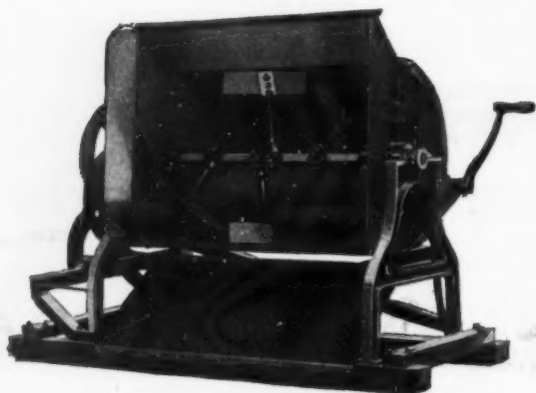
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The photograph shows the piling before driving, and also the forms used for concreting the cap and face.

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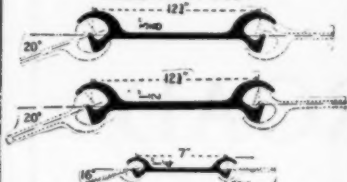
Pittsburgh, Pa.



## Types and Sizes of Lackawanna Steel Sheet Piling

The following sections offer types and sizes to economically meet any sheet pile construction problem:

### Straight-Web Type



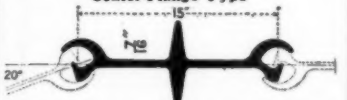
Suitable for general work and especially constructions requiring high tensional and compressive resistance of the pile section. The smallest size is much superior to wooden sheeting in sewer and trench work.

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Preferable where transverse strength of the pile is of primary importance, as in braced or tied constructions. A wall of this piling is very thin in proportion to its transverse strength, having no greater thickness over all at the centers of the arches than the over-all thickness of the interlocked joints. The arching of the web prevents distortion of the section in transmitting the load at the bearing on the waling timbers. Flattening the back of the web furnishes a long, straight contact with the waling timbers.

### Center-Flange Type



For constructions requiring high tensional and compressive strength, in connection with a fairly high transverse strength. The center-flange acts as a stiffener, increases the section modulus and furnishes means for attaching transverse ties, braces, etc., needed in special work, and for the mechanical bond of the concrete facing in protected piling.

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The enormity of the Tunkhannock Viaduct, D. L. & W. Railway Cut-off near Nicholson, Pa., is evident from these illustrations, from the height of 240 feet above the creek and the length, 2300 feet.

All eleven piers and the two abutment foundations here were built within cofferdams of Lackawanna Steel Sheet Piling, the performance of which is worthy of note.

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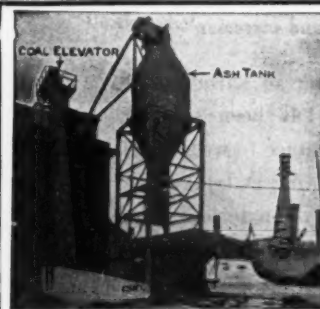
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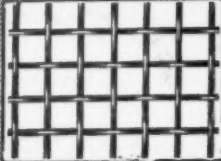
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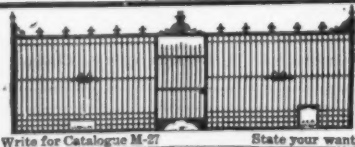
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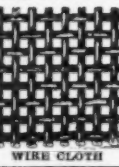
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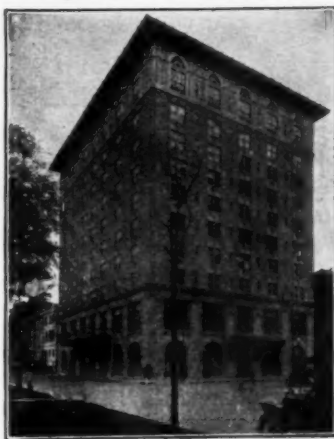
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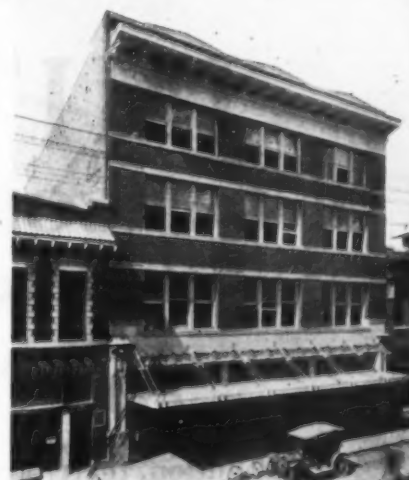
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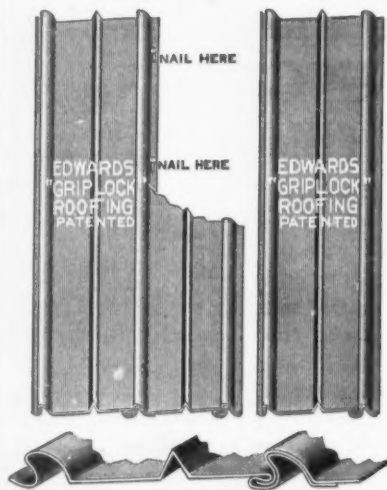
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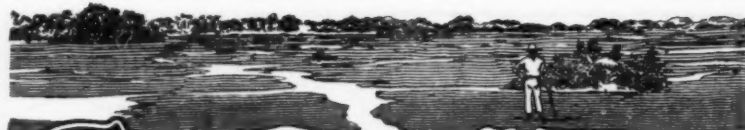
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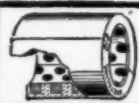
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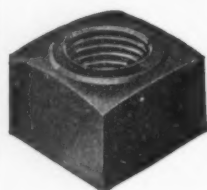


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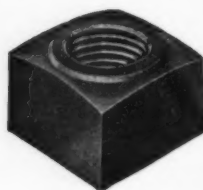


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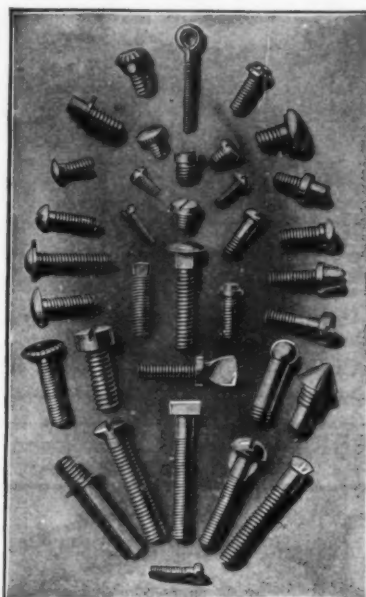
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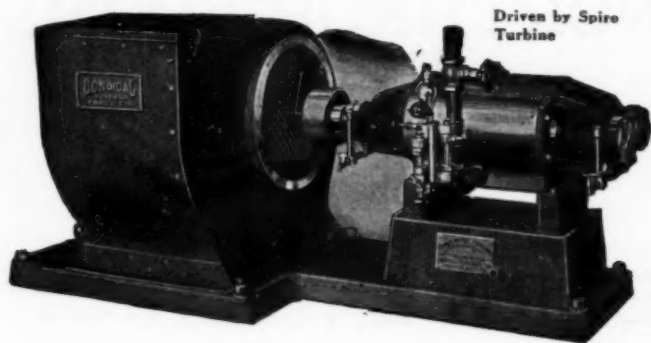
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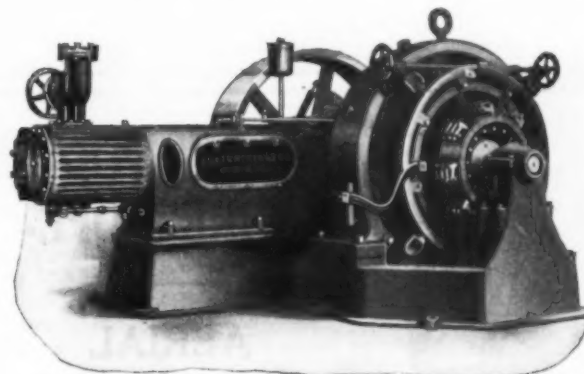
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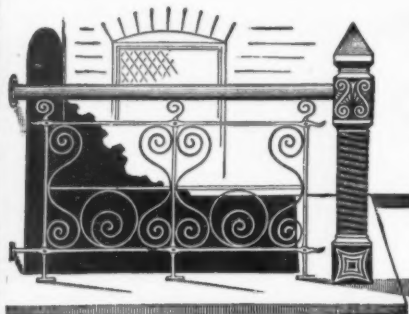
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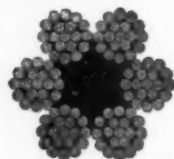
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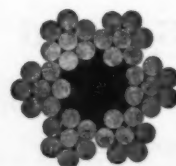
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Trade-Name Registered in the U. S. Patent Office

VOL. LXVI. No. 1.  
WEEKLY.

BALTIMORE, JULY 9, 1914.

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#### GET READY FOR BUSINESS.

A WELL-POSTED correspondent, writing from New England to the MANUFACTURERS RECORD as to reports of the enlargement of a number of existing plants in that section, says:

It is not a new practice for New England manufacturers to build extensions in advance of their requirements. In nine cases out of ten they will keep ahead of their individual needs, building in dull times almost always to take advantage of keen competition in times of depression for the benefit of the saving in reduced cost of construction.

This is directly in line with the suggestions made in the MANUFACTURERS RECORD last week that the time to do construction work, to enlarge plants, to put in new equipment by all concerns who have the money available, is in a time of depression such as the present. New England manufacturers, who are noted for their farsighted ability in planning for the future, have, as our correspondent says, always taken advantage of periods of depression such as we are now passing through for the enlargement of plants and the rearrangement of their shops in order to be ready for the good times when they come. This is one reason why New England has become such a vast manufacturing center. Its people have learned, generation after generation, that bad times never last forever, and so they get ready in bad times for the good times that they know will certainly follow sooner or later. A good many New England concerns are now getting ready by rearranging their plants and putting them in better shape, and in some cases making enlargements, to be ready to take advantage of the next burst of business activity whenever it may come. Though political activities may at times delay the coming of business activity, yet the latter always comes around, and the wise men are those who are ready to make the most of it.

#### TO MAKE CHARLESTON A COAL-SHIP- PING PORT.

THE closing of contracts between the Clinchfield Railroad interests and the city of Charleston for the building at that port of the long-projected coal pier to be constructed at a cost of about \$1,100,000, including the dredging needed upon the site of the pier, marks an important point in the development of the foreign commerce of Charleston and of the coal-shipping business through that port projected at the time when the Clinchfield Railroad was first undertaken. There have been many delays encountered in carrying out this enterprise, but this contract, which calls for the beginning of work within 60 days and its completion within two years, makes certain the building up of Charleston as an impor-

tant coal-handling port for coastwise and foreign trade, as well as for the bunker business.

This will bring to Charleston many ships calling for bunker coal, and will also greatly increase the attractiveness of that port for all steamship interests. It means that Charleston has received a new impetus and that henceforth it will have to be reckoned as among the important coal-handling ports of the South Atlantic coast. But there is more back of this than merely the development of the important coal interests of Charleston. The Clinchfield road, originally built with a view to opening up vast coal regions in Southwest Virginia and finding a market in the Central South, and through Charleston to coastwise and foreign ports, is now stretching its line westward, and at the Breaks of the Sandy in Kentucky it will meet the Chesapeake & Ohio. The region through which these two roads pass has been called "the heart of the world's coal field." Eastern Kentucky and Southwest Virginia have been marvelously dowered in coal, with quantity and with quality sufficient to justify a development far beyond what has yet been achieved. The opening of the Clinchfield's line through to the West by this Chesapeake & Ohio connection will carve out a new route for trade, and bring from the Central West, with its teeming population and its almost limitless industrial development, a great flow of traffic, both freight and passenger. This road will at the same time open up to the farmers and the fruit growers and the manufacturers of the South a direct short line into the heart of the West.

Charleston will, to a very considerable extent, be a direct beneficiary of the trade which will thus be created, because through the creation of its coal traffic it will be brought in direct touch with all of the activities of the Clinchfield people. It is well known that the Clinchfield interests have seriously considered the establishment at Charleston of iron-making industries and of other enterprises which will naturally follow the development of Charleston as an important coal point. All of this means that one of the oldest and richest cities of the South, which has accumulated great wealth, which has become one of the largest producers of fertilizers in the world, and which yet has hardly kept pace in broad development with the growth of other South Atlantic and Gulf ports, will now rapidly come to the front, and, utilizing the present situation, will begin a broader advancement than it has yet made. The building of the new coal pier at Charleston, therefore, has a far wider meaning than simply the expenditure of \$1,250,000 there. It means the creation of conditions which will assure the spending of many millions more in the development of other enterprises.

#### HOW AN INDUSTRY WAS SECURED.

ANNOUNCEMENT has been made in the MANUFACTURERS RECORD that the plant of the Baldwin Steel Co. at Charleston, W. Va., has been purchased by Stahlwerk Becker of Willich, Rhineland, Germany, and the plant will be immediately equipped for rolling high speed and tool steel. For the present the ingots are to be shipped from the Willich plant, but it is proposed later on to install equipment of machinery for manufacturing the steel products now made at the company's parent plant in Germany. Seamless tubes, high-speed steels, spring steel, automobile and other steels from the Willich plant have been heretofore marketed in this country in large quantities through the New York agents of the company.

There is an interesting lesson in the history of this case as to the permanent value of substantial improvements that may be made in the South. The Baldwin Steel Co. was originally composed of practical steel men who were backed by the late Samuel

F. Bowne. The plant was located in Charleston directly as the result of an advertising campaign carried on by the city of Charleston in the MANUFACTURERS RECORD. The buildings were well laid out and substantially built of concrete block, and equipment and machinery was installed for the manufacture of high-speed tool steel. Unfortunately, the nephew of Mr. Bowne, in whose behalf Mr. Bowne's chief interest centered, had not more than located in Charleston in charge of the plant before his death occurred. The result was disastrous to the undertaking, and it has never had successful operation in the hands of successors. However, the plant had been secured for Charleston; this is the point of the story. It was a fixture, and at last, after many years, it has fallen into the hands of a most substantial manufacturer, and it would seem that its future is assured, and, furthermore, that it will be operated on a vastly greater scale and with more advantage to the community than could have been the case had it remained in the hands of any interests not so well established as the Becker house.

#### TWENTY YEARS IN THE FERTILIZER INDUSTRY.

APPROXIMATELY 75,000,000 tons of commercial fertilizer have been used by American farmers and planters in the past twenty years, the quantity used annually increasing in that period from about 2,475,000 tons to nearly 7,000,000 tons. Such use has marked the growth, from comparatively small beginnings, of one of the most important industries of the country, one touching several other leading American activities. The twenty-first annual convention of the National Fertilizer Association at the Hot Springs of Virginia next week, in conjunction with the annual meeting of the Southern Fertilizer Association, will doubtless be the occasion of the presentation of interesting details about the many phases of the industry. But its general features may be sketched now with profit. In the absence of authoritative figures for years coincident with the date of the birth of the National Association and with the present year, resort must be had

Table A.—The Fertilizer Industry.

	1889.	1899.	1909.
Capital .....	\$40,594,000	\$60,686,000	\$121,537,000
Expenses .....	32,576,000	39,003,000	90,101,000
Salaries .....	4,672,000	2,125,000	4,406,000
Wages .....	4,672,000	4,185,000	7,477,000
Materials .....	25,114,000	28,959,000	69,522,000
Other .....	2,790,000	3,734,000	8,696,000
Products .....	39,181,000	44,657,000	103,960,000

In Table A to figures for the two decades paralleling the life of the organization.

In 1889 the capital invested in the manufacture of fertilizers of all kinds was \$40,594,000. The expenses of the industry were \$32,576,000, including \$4,672,000 paid in salaries and wages, and the value of the output was \$39,181,000. In the next ten years, a period of depression in agriculture, growth of the industry was comparatively slow, the capital increasing only by \$20,092,000, or at the rate of something less than 50 per cent. But by 1909 the capital had increased to \$121,537,000, or more than double that of 1889. In twenty years the capital increased from \$40,594,000 to \$121,537,000, or by \$80,943,000, equal to 199.4 per cent.; the expenses from \$32,576,000 to \$90,101,000, or by \$57,525,000, equal to 176.6 per cent., the increase in the cost of materials constituting more than 77 per cent. of the total increase in expenses, and the value of the products at the factory increased from \$39,181,000 to \$103,960,000, or by \$64,779,000, equal to 165.4 per cent. At the later date there was less return than at the earlier in value of products per each dollar of capital invested. But that situation merely reflected the general con-

dition in American manufacturing consequent upon an increase in the cost of raw materials, the rise in wages and added expenditures called for by improvements in equipment. Such increase, though, meant greater activity in the mining, agricultural and manufacturing industries which contribute, in primary or in by-products and wastage, the materials for commercial fertilizers. For instance, between 1894 and 1913 the output of phosphate rock in this country increased from 996,949 tons, valued at \$3,479,547, to 3,097,021 tons, valued at \$11,767,092. In the same period the production of pyrite increased from 105,940 tons, valued at \$363,134, to 341,338 tons, valued at \$1,286,084, about one-quarter of the sulphuric acid made in this country being derived from domestic pyrite. The annual output of sulphuric acid in the United States is now 3,538,980 tons, valued at \$22,366,980, and of the total quantity produced, some of it as a by-product of the smelting of copper and zinc, but most of it derived from pyrite, 90 per cent. is used in the fertilizer industry.

The manufacture of fertilizer has long had its home in the South consequent partly upon the dominant position of that section as a producer of such of the raw materials as phosphate rock, cottonseed, etc., and partly because of the greater appreciation of the South of the value of commercial fertilizers in the production of cotton, corn and early fruits and vegetables. Table B enables one to note at a glance

Table B.—Fertilizers Made in 1889 and 1909.

States.	1889.		1909.	
	Tons.	Value.	Tons.	Value.
Alabama	29,150	\$666,000	411,177	\$6,004,000
Florida	3,135	86,000	155,852	3,593,000
Georgia	230,207	4,554,000	888,137	15,908,000
Kentucky	10,268	255,000	*	*
Louisiana	11,773	264,000	78,878	1,397,000
Maryland	366,422	6,042,000	608,699	8,983,000
Mississippi	*	*	133,101	1,725,000
Missouri	11,496	208,000	11,415	230,000
North Carolina	54,424	939,000	323,562	5,946,000
South Carolina	293,806	4,379,000	512,714	8,728,000
Tennessee	8,200	221,000	179,356	3,234,000
Texas	33	1,000	2,509	57,000
Virginia	154,497	2,408,000	364,613	6,561,000
Total	1,173,411	\$30,023,000	3,670,013	\$62,366,000
United States	1,896,806	\$35,520,000	5,240,164	\$92,370,000

\*No separate figures available.

the development of the industry by separate States, the figures dealing with the output of establishments engaged solely in the manufacture of fertilizers and, therefore, being slightly less in the total than those in Table A, which include the fertilizer output of industries not making a specialty of them. Between 1889 and 1909 the tonnage manufactured in the South increased from 1,173,411 to 3,670,013, or by 2,496,602, equal to 212.7 per cent., while the increase in the rest of the country was from 725,395 to 1,570,151, or by 844,756, equal to 116.4 per cent. The tonnage in the whole country increased in the twenty years at the rate of 175.9 per cent. and its value at the rate of 160 per cent. In 1889 the South's output was less than 62 per cent. of the country's; in 1909 its proportion had risen to more than 70 per cent. of the whole.

Southern farmers have in the meantime been leading the country in the use of these fertilizers. The low price of cotton in the last decade of the nineteenth century restricted many of the activities of

Table C.—Spent for Fertilizers in 1889, 1899 and 1909.

States.	1889.		1899.		1909.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Alabama	29,150	\$2,422,000	411,177	\$2,599,000	411,177	\$7,631,000
Arkansas	94,000	94,000	173,000	173,000	173,000	597,000
Florida	3,135	86,000	753,000	753,000	753,000	3,610,000
Georgia	230,207	5,724,000	5,739,000	5,739,000	888,137	16,860,000
Kentucky	10,268	317,000	908,000	908,000	908,000	1,351,000
Louisiana	11,773	906,000	1,077,000	2,005,000	78,878	2,005,000
Maryland	366,422	2,420,000	2,619,000	3,388,000	608,699	3,388,000
Mississippi	*	789,000	932,000	2,708,000	133,101	2,708,000
Missouri	11,496	66,000	371,000	671,000	11,415	671,000
North Carolina	54,424	2,882,000	4,479,000	12,263,000	323,562	12,263,000
Oklahoma	*	4,000	*	29,000	*	29,000
South Carolina	293,806	3,867,000	4,494,000	15,162,000	512,714	15,162,000
Tennessee	8,200	261,000	898,000	1,216,000	179,356	1,216,000
Texas	33	59,000	125,000	595,000	2,509	595,000
Virginia	154,497	2,320,000	3,632,000	6,932,000	364,613	6,932,000
West Virginia	*	211,000	405,000	529,000	*	529,000
Total	1,173,411	\$23,299,000	3,670,013	\$39,254,000	3,670,013	\$75,542,000
United States	1,896,806	\$38,470,000	5,240,164	\$63,431,000	5,240,164	\$114,883,000

\*No separate figures available.

the South, including those of agriculture particularly. Their purchases of fertilizer did not keep pace with the output of the industry. But in the next ten years things were bettered materially, and the

amount spent by them for fertilizers more than doubled. In the twenty years between 1889 and 1909 such expenditure increased from \$23,299,000 to \$75,542,000, or by \$52,243,000, equal to 224.2 per cent., in the South, and from \$15,171,000 to \$39,341,000, or by \$24,170,000, equal to 159.3 per cent., in the rest of the country.

On another page of this issue of the MANUFACTURERS RECORD is an exposition by W. G. Sadler of Nashville, Tenn., secretary of the National Fertilizer Association, of the educational value of organization in the trade. To education into a deeper and wider appreciation of the benefits to be derived from the judicious use of commercial fertilizers is largely due the notable advance made in the past twenty years in the agricultural situation in the South. The lesson has not been lost upon the rest of the country, which, while the South is spending more than three times as much for fertilizer as it did twenty years ago, is spending more than the whole country spent then.

### THE SOUTH AND THE INCOME TAX.

INDIVIDUAL incomes in the South subject to the Federal income tax aggregate \$352,573,195, and corporation incomes in that section of like liability aggregate \$627,348,085, in a total in the whole country of \$3,396,760,392 individual income and \$4,307,981,942 corporation incomes subject to the tax. This estimate is based upon the preliminary report of results of the excise tax, coming over from the law of 1909, for two months, and the income tax for ten months upon corporations in 1913 and the income tax upon individuals for ten months in that year. The returns by districts in the South compared with the totals for the whole country appear in the following table:

Districts.	Income and excise tax.		Income tax.	
	Corporation.	Individual.	Corporation.	Individual.
Alabama*	\$300,796 74	\$102,586 10	\$300,796 74	\$102,586 10
Arkansas	110,784 10	41,239 25	110,784 10	41,239 25
Florida	127,085 22	108,800 43	127,085 22	108,800 43
Georgia	359,845 26	115,874 11	359,845 26	115,874 11
2d Kentucky	34,889 77	10,466 17	34,889 77	10,466 17
5th Kentucky	259,765 27	60,070 01	259,765 27	60,070 01
6th Kentucky	22,814 67	6,524 20	22,814 67	6,524 20
7th Kentucky	44,540 10	17,550 10	44,540 10	17,550 10
8th Kentucky	33,046 49	3,634 14	33,046 49	3,634 14
Louisiana	397,092 96	159,056 91	397,092 96	159,056 91
Maryland†	748,874 45	832,276 14	748,874 45	832,276 14
1st Missouri	990,769 20	457,176 63	990,769 20	457,176 63
6th Missouri	373,823 31	169,882 18	373,823 31	169,882 18
4th North Carolina	147,339 68	27,363 86	147,339 68	27,363 86
5th North Carolina	159,846 31	19,202 69	159,846 31	19,202 69
Oklahoma	225,065 74	93,082 15	225,065 74	93,082 15
South Carolina	102,126 48	25,816 08	102,126 48	25,816 08
Tennessee	279,341 01	98,277 59	279,341 01	98,277 59
3d Texas	711,874 32	361,965 21	711,874 32	361,965 21
2d Virginia	304,816 17	70,112 30	304,816 17	70,112 30
6th Virginia	206,615 85	32,525 74	206,615 85	32,525 74
West Virginia	332,327 75	94,627 97	332,327 75	94,627 97
Total	\$6,273,480 85	\$2,938,109 96	\$6,273,480 85	\$2,938,109 96
United States	\$43,079,819 42	\$28,306,336 69	\$43,079,819 42	\$28,306,336 69

\*Including Mississippi. †Including District of Columbia, Delaware and Eastern Shore of Virginia.

The returns bring out interesting facts worthy of close study by everybody concerned about the possible outcomes of the change in the taxing methods entered into so hastily by the Government.

As the figures now stand, the Southern internal revenue districts, having a population of 35,000,000, or 35.4 per cent. of the total 98,800,000 population of the country, paid \$2,938,110, or only 10.4 per cent. of the total \$28,306,337 of the individual income tax. The districts embracing Missouri and Maryland, including the District of Columbia, the official home of many income taxpayers, and Delaware, and having an aggregate population of about 5,300,000, paid \$1,489,335, or more than half the total paid in all Southern districts.

In that is a situation similar to that of New York State, which, containing a population of 9,899,700, or only 10 per cent. of the total population of the country, paid \$12,523,246, or nearly 45 per cent. of the total paid in the country.

The Southern districts paid \$6,273,481, or 14.6 per cent. of the total \$43,079,819 of the corporation excise and income tax, and of the total combined taxes, individual and corporation, amounting to \$71,386,156, the Southern districts paid \$9,211,591, or 12.9 per cent.

Curiously enough, the \$71,386,156 aggregate of the individual and corporation taxes are within less than \$1,270,000 of the estimated revenue from the indi-

vidual income tax alone, upon which dream the income tax law was originally based. By the time the law had been placed upon the statute books modification of the estimate, which was evidently pure guesswork, had been made, and Secretary of the Treasury McAdoo was led in his first report, as of December 1, 1913, to estimate that, under the new law, corporations would yield \$41,000,000 and individuals \$54,000,000, or a total of \$95,000,000.

According to latest reports the individual incomes have yielded hardly 55 per cent. of the estimated amount, while the returns from corporations are about \$2,000,000 greater than the estimate, making the total \$23,000,000 less than the December 1 estimate.

There has been some ridiculous talk in official circles in attempted explanation of this fluke in fiscal guessing, talk intimating wholesale evasion of the tax. But it is believed that when the whole matter has been sifted, if it ever shall be sifted, it will be discovered that deliberate evasions, the only ones that can be considered by the authorities in attempted prosecution, have been at a minimum, and that the losses to the Government on their account have been more than balanced by the losses to honest taxpayers in the mistakes they have been led into making through the element of confusion introduced into the administration of the law by the Internal Revenue Office at Washington, uncertain itself as to the meaning of the language of the law, backing and filling in its regulations and clinging apparently to the false notion dominating the individuals active in passing the law to the effect that the great mass of successful and thrifty citizens of the country are potential crooks. Even casual study of the returns of the tax for 1913 ought to send such suspicion to the darkness where it belongs and to lead someone in authority at Washington to devote intelligence to bringing the income tax law into harmony with the principles of equity and democracy and into accord with the simple rules of English diction.

### THE ONLY ROAD TO SUCCESS.

ONE of the interesting characters in the advertising world, a man who, through a series of letters in religious publications, is always seeking to arouse the young people of the country to the importance of doing things, and doing them right, is Craig Ridgway of Craig Ridgway & Sons, Coatsville, Pa. This firm manufactures elevators, but it always makes its advertising something unique and out of the usual order.

Very much along the line of the editorial in a recent issue of the MANUFACTURERS RECORD about the necessity of unceasing work and perseverance on the part of the young men who would succeed, though told in a very different vein, is the story presented by Mr. Ridgway in connection with this week's advertisement as it appears elsewhere. The lesson taught is one worth studying. The young man who wants to know something about the road to success where the trail has been blazed by men like Ridgway may read with interest his presentation, which is as follows:

#### WE WOULD BE A MILLIONAIRE IF WE WERE A YOUNG FELLER JUST OUT OF COLLEGE.

We would like to have a nice home, a high standing, many friends and all the nice and pleasant things at the command of a GOOD MAN who has clean money.

We would get our million by mastering or near-mastering the Steel and Iron Business.

In no other business is there such an opportunity for the Honest, Serious, Determined, Self-denying, Gentlemanly, High-Character young graduate.

There is many an "Old Man" who would just love to have a fellow like that next to him right now. Wouldn't you, Governor?

But, alas, there is only one in a hundred. The rest smoke cigarettes, run the theaters, haunt the Onyx-Mahogany's, and only do enough work to just "get by."

Don't catch those fellows burning the midnight oil studying up on Electrical Furnaces, By-Product Coke Ovens, Gas Engines, Finance and how to swing Big Capital.

If I was the young fellow just out of college, I would begin down at the dirty old steel plant, or out in the mill, and I would study to be that hundredth man.

I would keep my eye on that Competency.

And I would be just as sure of arriving there as I would be sure of arriving at spectacles and grizzly and happy twosome and ten.

We would qualify Mr. Ridgway's intimation that the iron and steel business is the one pre-eminent



opportunity for young men. It is a splendid business. It has opportunities without end. But the same thing is true of many other lines. The field is limitless. We are at the beginning of the electrical age, and thousands of young men will reap fame and fortune in electrical work. The day of the chemical engineer has scarcely dawned, and thousands will find limitless possibilities in creating new things by the training acquired as chemical engineers. Road making, forest preservation, civil engineering, drainage and reclamation work, hydro-electric possibilities, mercantile and professional life, all offer vast possibilities for men who are willing to do what Mr. Ridgway has so clearly pointed out must be done by the young man who would succeed. How true it is, as he suggests, of the kind of young men needed there is only one in a hundred, while the rest are killing body and soul with cigarette smoking or wasting their time in theatergoing and similar pursuits without benefit to body, soul or brain. The one young man out of a hundred who is really getting ready for the big job is always in demand; the others are tolerated, but are dropped by the wayside whenever the chance offers to find somebody who can do their work better.

#### A COMMON MEETING GROUND FOR ALL.

W. M. B. SCAIFE & SONS COMPANY, Pittsburgh, in a letter to the MANUFACTURERS RECORD, says:

In your issue of June 15, 1914, you give a description of china-clay deposits in North Carolina, written by C. P. Grimsley, mining geologist. In reading the description of the process we find that we have an apparatus which would take the place of the clay filter presses and do the work much faster and at about one-fourth of the cost. We would like to get in touch with the proper party who is operating this plant.

This is only another illustration of the fact that a careful study of the MANUFACTURERS RECORD often enables makers of machinery to find a new opening for their product, and enables users of machinery to have submitted to them equipment for improving the handling of their output, about which they may otherwise never have known. The MANUFACTURERS RECORD is the great meeting place for buyer and seller, for maker and user. It is a forum for discussion, a treasure-house of facts contributed by a wide circle of people; those who tell through our news columns of new enterprises established or to be established, and those who tell through our advertising columns of the things that they have for sale, whether it be the experience and the brain work of the engineer, or the widest variety of machinery and other supplies produced by a thousand or more of the foremost concerns of the country; whether it be opportunities for investment in lands, or the establishment of industries along the lines of various railroads, or any other of the thousand and one things which are factors in human life and a nation's advancement. In the columns of the MANUFACTURERS RECORD, as nowhere else, these things are brought together.

#### AGAINST MIGRATION FROM THE SOUTH.

THAT the Southern Railway will sell no more low, one-way colonist rates from any point on its lines to the West and Northwest is an announcement by President Fairfax Harrison of the permanent withdrawal from participation in such rates from points where they have been in effect to meet similar rates offered by competing lines. It is an announcement that must have an excellent effect in encouraging stability of population in the South. As is naturally and correctly felt by President Harrison, the South offers greater opportunities than any other section for homeseekers and investors. Among some of its people the very fact that cheap rates to other sections have been available has tended to beget a restlessness and an inclination to neglect the immediate benefits for the possibilities at outside points magnified by the haze of distance. This is not as it should be. Therefore, while continuing to offer homeseekers' rates into the South, the Southern Railway by its new policy will contribute to advance one of the best kinds of advertisement of the South—the fact that its own people are making the most of their own section instead of adventuring in less attractive parts of the country.

## Three Great Conventions of Tremendous Importance

THE AMERICAN BANKERS' ASSOCIATION, THE AMERICAN ROAD CONGRESS AND THE AMERICAN IRON AND STEEL INSTITUTE TO MEET IN THE SOUTH.

From the report of the Pittsburgh meeting of the American Iron and Steel Institute, held in October, 1912, the following extract is taken from a statement made by Judge Gary, the president:

While sitting here I have received a telegram from Richard H. Edmonds, the editor of the MANUFACTURERS RECORD, which reads in part as follows:

"As the development of the South means the enrichment of the nation, and as many members of the American Iron and Steel Institute are not personally familiar with the great mineral resources of this section, and others have not been South of late years to see the vast industrial progress of this section within that period, the MANUFACTURERS RECORD would take the liberty of urging that the next annual meeting be held in Birmingham. Such a visit to the South would prove interesting to all the members and of great value not only to the South, but to the whole country by broadening the personal acquaintanceship of the leaders in American industrial development with the vast potentialities of the Southern States in coal, iron and steel, and chemical interests, in water-powers, in cotton and in other resources for material upbuilding."

I read this for the purpose of giving anyone opportunity to express himself, if he desires, at this time, or of taking a vote on it, if you desire, as a recommendation to the board of directors. If no action is taken here, the board of directors will at some future meeting very carefully consider the question. I think it is the consensus of opinion, or was at the last regular annual meeting of the Institute in New York, that the annual meeting should generally, if not always, be held in New York, but that during the year, at such times as might be designated by the board of directors, there should be held meetings of the Institute at other localities scattered throughout the country, and therefore this suggestion is appropriate.

When that telegram was sent the MANUFACTURERS RECORD was fully aware of the fact that Birmingham was not at the moment equipped with adequate hotel facilities for the accommodation of such a meeting as that of the American Iron and Steel Institute, but new hotels had been projected, and it was thought that prior to the time when the meeting could be held ample hotel accommodations would be available. The construction of these hotels, however, was delayed, and it is only now that Birmingham is able to offer hotel facilities adequate for such a gathering. And with these facilities and the large development in iron and steel and coke making in the district the time has now come when this invitation could be accepted, and the American Iron and Steel Institute will meet in Birmingham in October next.

In some respects this meeting should prove to be one of the most important gatherings of business men ever held in the South.

At Richmond in October next the American Bankers' Association, representing the vast financial interests of the entire country, will gather in annual convention. These men represent the financial forces of the country and exert a mighty influence upon investments in every section. Their coming to the South is of significant importance.

The American Road Congress, to be held in Atlanta in November, will bring together the most active workers for good roads in the country.

It is especially significant as to the pre-eminent position which the South is now commanding in the business world that three of the greatest business conventions ever held in this country by three of its most important business organizations are thus scheduled for the South in October and November.

It may not be amiss to say that the MANUFACTURERS RECORD, through all the influence it could bring to bear, worked persistently and energetically to impress upon the bankers of the country the importance of holding this meeting in the South. To the president of the last annual convention, at its meeting in Boston, the editor of the MANUFACTURERS RECORD sent the following telegram on October 7, 1913:

May I not take the liberty of suggesting to your association that in considering the question of the place of its next meeting it take into account some of the reasons why the South should be selected?

The South produces a crop which has a more important bearing on the financial interests of the world than any other crop produced in this or any other land. This crop—cotton—annually brings to the South nearly \$1,000,000,000, and brings to the United States in gold or in credits from foreign lands from \$500,000,000 to \$600,000,000 a year, or con-

siderably more than the annual gold production of the world. It is this enormous exportation of this great staple which makes possible the balance of trade in favor of the United States and the maintenance of our financial interests.

Notwithstanding the value of the cotton crop in the financial affairs of the world, that staple yields only one-third of the total value of the South's agricultural products. This section, though yet in the infancy of its development, is annually producing from its crops more than \$900,000,000 in excess of the total value of the agricultural products of the United States in 1880 and \$700,000,000 more than the value of the agricultural products of the United States as late as 1890.

The amazing development of the South is typified in the fact that the individual deposits in the national banks of this section now largely exceed similar deposits in all the national banks of the United States in 1880. This section is spending at the present time \$90,000,000 a year on the maintenance of public schools, compared with a total of only \$78,000,000 for the United States in 1880.

This section has \$700,000,000 more capital invested in manufacturing than the United States had in 1880.

These facts should be studied in the light of the South's population of 33,000,000 at present, compared with a population of 50,000,000 of the United States in 1880.

It is not so much as to what the South has done, despite the overwhelming poverty following the war that for many years rested as a pall upon this region, as what its potentialities justify for future development.

The South has 88,000 square miles of coal land, as compared with 44,000 square miles for all of Europe. It has iron ore in keeping in extent and proximity with its vast supplies of coal. It has nearly one-half of the standing timber of the United States. It is developing its vast hydro-electric powers, in which many millions of Northern and Western and European capital are being put. The South has the resources and the area for supporting a far larger population than that of the entire country at present. It can produce the cotton and the wool for clothing them, the food supplies for feeding them, and it might provide the resources for their fullest employment in agriculture, in mining, in industrial pursuits and in commerce.

In view of these facts the MANUFACTURERS RECORD would take the liberty of suggesting to the bankers of the United States that their next convention be held in this section in order that they may study what has been done and see for themselves the limitless possibilities of the future.

At the annual meeting of the American Road Congress in Detroit, the most important meeting ever held in this country in behalf of good roads, considering the attendance and influence exerted, the MANUFACTURERS RECORD, through its representatives and by personal appeal to its officials, presented the advantages of the South and the reasons why the next meeting of the Road Congress should be held in this section.

To the president of that congress the following telegram was sent by the MANUFACTURERS RECORD:

Not only because of the fact that the development of the South means the enrichment of the nation, but because of the fact that the South is alive as probably no other section of America to road building, the MANUFACTURERS RECORD would urge that the next session of the American Road Congress be held in the South. This section is now spending at the rate of over \$50,000,000 a year in the building and maintenance of roads; many millions of bonds have been voted during the last 12 months, and many millions more will be voted in the near future for the furtherance of road building. This section is testing every variety of material in road building. The coming of the congress to the South next year would be of tremendous interest to every member. It would afford to thousands who have never before had the opportunity of seeing the South an occasion to visit this section, to study its resources and to see the magnificent work it is doing in road building. There is no other place in America which could offer to the members of the Congress greater attractions for its next session than the South.

The progress which the South has made during the last quarter of a century should appeal to the patriotism of every lover of his country, and those who have not for themselves seen this wonderful development would, if the next Road Congress be held in the South, have the opportunity of studying for themselves a development which is the marvel of the world.

With a population of 33,000,000, as compared with 50,000,000 as the population of the United States in 1880, the South is doing a far larger business than the entire country was doing in 1880. It has \$700,000,000 more capital invested in manufacturing than the United States had in 1880. The value of its agricultural products exceeds by \$900,000,000 the value of the agricultural products of the United States in 1880. The South is mining 50,000,000 tons more of coal than the United States then mined. It is producing three times as much petroleum; it has more individual deposits in its national banks than the entire country then had, and it is now spending \$90,000,000 a year

on the maintenance of public schools, compared with a total of only \$78,000,000 for the United States in 1880. These are but typical illustrations of this amazing progress from the overwhelming poverty following the war, but they are merely indicative of the still greater progress which awaits this section.

Let the American Road Congress come South and see for itself what this section has achieved against obstacles greater than any other country of modern times has ever faced, and then it will have a fair conception of the limitless growth of the coming years, and then it will understand why the South is making such magnificent progress in road building.

Here are three of the most important conventions that can be brought together in this country, all to be held in the South this year, and we believe quite largely through the work of the MANUFACTURERS RECORD, but these facts are not published in order to claim any credit, but merely to emphasize the importance of these great gatherings. Energetic men from Birmingham, Atlanta and Richmond were all active workers in bringing about these results. The telegrams sent by the MANUFACTURERS RECORD are reprinted merely to bring out clearly some striking facts about the South bearing on banking, on road making and on the iron and steel industry.

The American Bankers' Association represents the financial interests of the entire country. Its meeting at Richmond must necessarily be productive of great good to the South.

The American Road Congress, which accepted the invitation and decided to hold its next meeting at Atlanta, will be even greater in attendance and in importance, so far as any can be judged, than the Detroit meeting. The plans that have been made assure a very large attendance, promising far to exceed the attendance at Detroit, the largest in the history of the organization. This Congress will cover every phase of road building, and the exhibits of road-making machinery and materials will be of great educational value to every man in attendance interested in highway work and to the millions who will be indirectly reached through the reports which will be published in the South and elsewhere about this road meeting and the road-making exhibits.

And now third on the list, and last to be announced, comes the meeting of the American Iron and Steel Institute. This is in some respects the greatest organization of manufacturers in the world, having 1200 or more members, representing iron and steel in all its widest ramifications. This organization exerts a mighty influence for the betterment and advancement of every line of metallurgical work. It is to this country even more than the British Iron and Steel Institute is to Europe. Producing, as the United States does, about 40 per cent. of the world's iron output, and by reason of this dominating position in the business of iron and steel exerting a world-wide metallurgical influence, this Institute is the most important organization of iron and steel men in the world. Since its formation, a few years ago, the American Iron and Steel Institute has probably, as an organization and through its members, done more to develop a broad policy of co-operation, instead of cutthroat competition in business, than has been exerted by all other business organizations combined. It has been the pre-eminent leader in advancing this spirit of co-operation, and in connection therewith has carried on an aggressive campaign for the betterment of the laboring people connected with this industry. The influence that follows the annual meetings of this organization is far-reaching.

Included in the membership are practically all of the foremost men identified with iron and steel making in all the ramifications in this country and some in Canada and other foreign lands. Among the honorary members are some of the foremost iron and steel men of Europe. The list of members includes most of the officials connected with the great iron and steel making enterprises from the Atlantic to the Pacific. In some cases a dozen or more officials of a single company are members. The leading iron centers of the country are represented by a long list of members. Pittsburgh, for instance, has 168 members, Chicago 104, Cleveland, 91 and Youngstown 52.

As important as the meeting of the American Iron and Steel Institute in Birmingham will be to that section—and it is difficult to exaggerate this, for many of these men have not had an opportunity of studying in person every phase of Southern resources and Southern development—this meeting will be equally as important to the members of the Institute. It will give to them an opportunity of seeing the South in a way in which they have never seen it

before. They will be able to study in person and see for themselves something of the vast resources of the South in coal and iron and in all the wide range of minerals with which, directly or indirectly, these men come into touch. While pre-eminently concerned in iron and steel developments, they are all necessarily vitally interested in everything that makes for the material upbuilding of the country and thus for the broadening of the market for their products. They are makers of steel rails, of rolling-mill products, of machinery, of wire and wire products; they are operators of coal mines and iron-ore mines; they are builders of ships and of bridges, of structural iron and steel; they are exporters of iron and steel products and importers of iron ore. Many of them control vast capital. Many of them have accumulated great fortunes in the development of the iron and steel interests of the country. When they come South they will have an opportunity of studying what may be called a virgin region, rich in resources which have scarcely been touched.

It is true that in Birmingham and other points they will find that great progress has been made in the making of iron and steel, in the production of by-product coke and in kindred work, but they will find that the South is yet in the infancy of its development. They will find that it is the nation's greatest asset, and that its development will add more largely to national wealth and progress than would the development of any other section of the land. As these iron and steel people study the situation they will come to a better understanding of why the development of the South means the enrichment of the nation. It is certain that vast good will come to the South and to the members of the American Iron and Steel Institute from this visit to the South and the holding of the October meeting in Birmingham.

The business interests of the whole country are to be congratulated that these three great organizations, the American Bankers' Association, the American Road Congress and the American Iron and Steel Institute, will this year hold their annual meetings in the South. It is an omen of good, not alone for the South, but for the whole country, that the foremost financial men, the foremost iron and steel leaders and the men whose work is making possible the road-building era of the day will all gather in the South this year. Millions of dollars will be invested in the South as a result of the influences thus set into motion, and every newspaper in America will next fall be full of reports about the South and of these great gatherings.

## BIRMINGHAM DISTRICT BETTERMENTS.

### Tennessee Coal, Iron & Railroad Co. to Improve Steel Plant Facilities.

[Special Dispatch to Manufacturers Record.]

Birmingham, Ala., July 4.

The Tennessee Coal, Iron & Railroad Co. will begin work immediately on the following additions and improvements:

At the Ensley division a 16-inch gas main, costing about \$20,000, will be installed at No. 2 open-hearth department. The smelting of steel has been carried on in this department with gas manufactured in coal-gas producers, and the purpose of this gas main is to substitute by-product coke oven gas from the Fairfield ovens for the coal producer gas. The supply of gas for this purpose will be diverted from boilers under which it is being burned at present to the open-hearth department as a result of experiments which have been conducted for many months, and which indicate that a greater return can be secured by using the gas to melt steel where high temperatures are required than by using it under boilers.

At the Bessemer rolling mills improvements costing about \$55,000 will be made to the eight-inch guide mill. These improvements are as follows:

A continuous heating furnace for securing greater uniformity in heating steel and for securing a reduction in the cost of heating steel. Hotbeds will be installed to cool the material in such a way that it will be straighter, which will improve the quality of the products, as well as enable the mill to operate more economically and continuously. The most important improvement will be the discarding of the steam engines which drive the rolls on this mill, substituting therefor electric-motor drives. The current used for these motors will be purchased from the Alabama Power Co.

At the Muscoda ore mines division, a combined

schoolhouse and auditorium for white employees, costing about \$6000, will be erected.

At the Ensley division in the quarters west of the steel plant, for the colored employees, there will be built a four-room schoolhouse costing about \$4000.

## The Birmingham Iron Market.

[Special Correspondence Manufacturers Record.]

Birmingham, Ala., July 4.

The pig-iron market has been quiet the past week, and only a small quantity of iron has been sold by the interests on this district. It is probable that not more than 10,000 tons have been booked for delivery, a greater part of this being for the third quarter, and very little for the fourth quarter. One interest sold 1900 tons in Southern territory, and another sold 2100 tons of special analysis iron for shipment to Sidney, Australia, this order going out at once from the yards. It has been rumored for several days that one corporation has sold a large order, but officials of the company will not verify the report, but as there has been so little buying in large quantities since the first week in June, it will be no surprise if the order is not placed, but no official announcement made of the sale at this time.

The price has weakened during the week, and all iron sold has been at \$10.25 for third quarter and \$10.50 for fourth quarter delivery. It is the impression among many of the officials that No. 2 foundry iron may be forced down to \$10, but a strong effort will be made to maintain the prices quoted above.

The old material market is still very quiet, some sales, but at prices below quotations, the sales being made to reduce the stock in the yards. The demand for the first six months of the year has been lighter than for several years, and there is little prospects of any activity until the pig-iron market gets on a firmer buying basis.

Cast-iron pipe is still a drag, some orders, but those far below the business of a year ago, and the outlook at this time is not bright for a better market. All of the companies are shipping pipe, but many are filling orders of a long time ago, and the pipe is taken from stock on the yards.

Coal conditions have been given a boost during the week by the placing of orders for more than 1,000,000 tons of coal, the Southern Railway contracting for approximately 700,000 tons, while the Atlantic Coast Line has contracted for 235,000, and the Georgia Southern & Florida, owned by the Southern Railway, is now in the market for 150,000 tons. A few weeks ago the Seaboard Air Line placed an order for 400,000 tons in the district. It is the general opinion that the output of the mines of Alabama will exceed the output of 1913.

During the early part of the week the Gulf States Steel Co. issued orders for the lighting of 300 beehive coke ovens at Virginia mines, and all of the ovens are burning. The mines have resumed work on full time, working at mines and coke ovens nearly 500 men. The coke made at Virginia is shipped to the steel plants of the company at Gadsden, and there are rumors that a furnace of the company at Gadsden will be blown in at once.

The America Tar Products Co. has located a site just north of the by-product plant of the Woodward Iron Co., and the company has engaged the entire output of the coke-oven plant, out of which will be distilled creosote and tract hard and soft pitch. The present investment will be \$100,000, but this will soon be increased to \$250,000. R. H. Ruddell is in charge of the construction of the buildings for the company.

The Birmingham Stove & Range Co. has increased its capacity one-third, as well as increasing the force of men employed at about the same proportion. Ager & Cline of Birmingham secured the contract for the new five-story building to be built in Bessemer, the bid being \$67,000. Plumbing, heating and electric lighting will add to the cost, making the total about \$85,000.

The assets of the Atlantic & Gulf Portland Cement Co. were sold in Birmingham Wednesday for \$630,000. The property was bought in by G. R. Hartman, representing stockholders and bondholders of the company, most of whom reside in Baltimore. The sale was made by W. S. Lovell and J. H. McCarter, trustees, for the purpose of reorganization. The plant is at Ragland, in St. Clair county, and has been in steady operation for the past two years, since it went into the hands of the trustees. The output of the plant is 30,000 barrels of cement a month. The Coosa Portland Cement Co., capital stock \$200,000, will be the new company, and John B. Stevenson of Philadelphia will be president.



## Organization in Fertilizer Trade\*

By W. G. SADLER of Nashville, Tenn., Secretary of the National Fertilizer Association.

Twenty-one years ago there was not in existence in this country a single association composed of fertilizer manufacturers, or of anyone interested in the manufacture or use of fertilizers. What can we say along this line today? We can with pardonable pride point to the Middle West Soil Improvement Committee at Chicago, which is maintained and conducted exclusively by members of the National Fertilizer Association, and which for several years have sent out hundreds of thousands of bulletins and pamphlets to the farmers in the Middle West, and all this literature contained the very best information that could be gotten from scientific and practical agriculturists who are competent to teach the farmers the very best methods of farming and also the best and most economical manner of using commercial fertilizers to bring the best returns possible. The success of this committee located in Chicago has been wonderful, and in the next few years we will see the increase of the use of fertilizers and the great increase in acreage crop production in the Middle West go beyond our fondest expectations.

In this city, the Gateway to the South, is the Soil Improvement Committee of the Southern Fertilizer Association, and I am proud to say that 75 per cent. of the members of the Southern Fertilizer Association are members of the National Fertilizer Association. The Soil Improvement Committee of the Southern Fertilizer Association is conducted by T. N. Stewart and W. E. Richards of Atlanta, and Harry Hodgson of Athens, Ga. The bulletins prepared and sent out by these able gentlemen are interesting, instructive and reliable, and should be read not only by the farmers of Georgia, but of other States. There are several other bureaus of education that are working along the same lines as the two committees above referred to, and are doing splendid work.

Not only is the National Government doing much to better conditions on the farms by encouraging the raising of better livestock and crops adapted to the soils cultivated, but many of our States are doing good work along this line by the establishing of experiment stations, which they have not only properly equipped with up-to-date machinery and tools, but which is more important, they have in most instances up-to-date and thoroughly-trained men at the head of these institutions, and without in the least detracting from many of such men that I personally know, I want to mention two that every man in this audience knows. I mean Professor Soule of Georgia and Professor Kilgore of North Carolina. Two men who devote their entire time to the agricultural interests of their States, and, in my humble opinion, are the equal of any whom I know in their line of work.

When I commenced the manufacture of fertilizer, about 31 years ago, outside of two or three States, there were not one dozen fertilizer manufacturers who knew each other personally, and what they did know about each other was not always favorable. What is the situation today? The producers of about 80 per cent. of all fertilizers made and sold in the United States are members of the National Fertilizer Association or the Southern Fertilizer Association, and at least once each year they meet in convention and spend several days in pleasant social intercourse, and in the discussion of subjects of interest to both manufacturers and consumers of fertilizer, and always leave these conventions with the very best feelings of good-fellowship.

In the early days of production in this country there was a great lack of method and scientific knowledge exhibited in many so-called factories. Much of the manufacturing was conducted in a very haphazard manner, and few of the manufacturers with whom I came in contact gave much thought about how their goods would be used by the consumer. The result was a great waste about most factories, and often bad results were reported, for the reason that the consumer did not know how to properly use the goods. Today you will find in every up-to-date fertilizer factory, and all are such that I see, the very latest devices, inventions and discoveries, and the manufacturing departments are under the management of skilled and scientific men, who are as careful and particular in using a formula as is your best pharmacist in this city in filling a prescription which has been given by a physician to a patient. The result is that every ton of fertilizer made under the supervision

of skilled men, and by the very best fertilizer machinery made, is exactly like every other ton of same guaranteed analysis, and the buyer can feel perfectly safe in buying on this guarantee.

Thirty-odd years ago this entire country used only a few hundred thousand tons of fertilizer. From the best information we can gather, there was used last year over 6,000,000 tons, and from present indications we will reach near the 7,000,000 mark the coming season. Georgia alone used over 1,000,000 tons last year, about one-sixth of the total tonnage of the United States, and her bumper crops show the wisdom of using so much.

With the large tonnage of fertilizer now consumed in this country, the business is just in its infancy, and will make more rapid strides within the next 25 years than in the past 25. Every acre of land now in cultivation must be made to produce more than it ever before produced, and to do this it must be cultivated in the most scientific manner and must be properly fertilized in order to get the very best results. And when I say "fertilized" I do not mean that commercial fertilizer only should be used on the land, but use all stable manure that it is possible to get, and rotate crops to the very best advantage in order that you may get the biggest crops possible. This must be done to enable us to feed all the hungry mouths in our country, which are multiplying more rapidly than our acreage production is increasing.

Not so many years ago the fertilizer business was looked upon by some with a degree of suspicion, and many had a hard fight to get proper recognition by many interests.

Since I have been in the business some of the railroads used to poke fun at us, and all of you remember when they had "fertilizer days," just like they did "coal-oil days," and many times they did not respect the day they had set apart for our stinking business. But they have changed their views in many respects, and today all the roads in the section of country where fertilizer is largely used begin months before our shipping season to bank their empty cars near the large manufacturing and shipping centers and use every means in their power to move fertilizer promptly, and today trains of fertilizer move as rapidly and make as good time as trains loaded with vegetables and fruit or other perishable property. And, so far as I know, the rates are reasonable and satisfactory. I can tell you something else the railroads are doing. That is, I know several who are. They are conducting experiment farms and teaching farmers how to grow better stock, better crops and build better and more comfortable homes, and better roads, too. They are doing more than this, and this will interest you; they are using commercial fertilizers on every one of their experiment farms, and using it both intelligently and profitably.

I want to give every manufacturer present a cordial invitation to join the National Fertilizer Association, provided he is not already a member, and I assure you that we are not a "trust," nor do we do anything forbidden by State or National law, but if you will affiliate with us we believe that we will do you much good.

To get personally acquainted with your competitor, to be on intimate terms with him, to meet him annually at our conventions, to put your feet under the table with his and exchange ideas with him, is worth more than it will cost you.

As before stated, we are not a trust; we do not make prices for anyone except our individual selves; we will not undertake to collect any bad debts except our own, but we have a "trouble department," which our secretary endeavors to look after, and often his service along this line will be worth more to you than many years' dues.

### Phosphate Terminals Planned.

Phosphate terminal facilities reported to cost \$500,000 are planned for construction at Tampa by H. L. Pierce, president of the Export Phosphate Co., Mulberry, Fla., and associates. To undertake this work they have incorporated the Export Phosphate Railway & Terminal Co., with \$50,000 capital stock, and privilege of increasing to \$2,000,000. Officers of this corporation are: E. L. Blood, president; H. E. Capewell, vice-president; E. Albert Pierce, secretary-treasurer; all of the Export Phosphate Co. Plans contemplate the construction of a 1000-foot pier for future extension to 1500 feet, and

railway from phosphate mines to terminal, reported to cost \$200,000; phosphate drying and handling equipment reported to cost \$300,000, etc. Options on terminal locations (east side of Tampa estuary) have been secured and the railway is being surveyed. The company's engineers are G. D. and H. D. Mendenhall of Jacksonville, and B. M. Sullivan of Tampa is associate engineer on estuary portion of plans.

### NATIONAL FERTILIZER ASSOCIATION

To Meet With the Southern Organization at Virginia Hot Springs.

Because the South is making most of the commercial fertilizer of the country, and because it is using most of what it makes, gives especial interest to the meetings next week at the Hot Springs of Virginia of the National Fertilizer Association, in twenty-first annual convention, and the Southern Fertilizer Association, in ninth annual convention. Arrangements have been made for the delightful entertainment of the visitors for practically the whole week, as there will be meetings also of bodies affiliated with the main ones. Included in the program are addresses by President C. F. Burroughs of the National Association, Pierre Jay, vice-president of the Bank of Manhattan Co. of New York; George Braden, president of the Federal Chemical Co. of Louisville, and representatives of the various activities of the industry.

The officers of the National Fertilizer Association are Charles F. Burroughs of the F. S. Royster Guano Co., Norfolk, Va., president; Gustav Jarecki, Jr., of the Jarecki Chemical Co., Cincinnati, O., vice-president; C. H. Dempwolf of the York Chemical Works, York, Pa., treasurer; W. G. Sadler of Nashville, Tenn., secretary; Charles F. Burroughs of the F. S. Royster Guano Co., Norfolk, Va.; Gustav Jarecki, Jr., of the Jarecki Chemical Co., Cincinnati, O.; W. D. Huntington of the International Agricultural Corporation, Buffalo, N. Y.; Charles Ellis of the Mutual Fertilizer Co. of Savannah, Ga.; J. T. Welch of the Welch Fertilizer Co., Columbus, O.; William Prescott of the American Agricultural Chemical Co., New York; C. H. Dempwolf of the York Chemical Works, York, Pa.; Charles G. Wilson of the Virginia-Carolina Chemical Co., Richmond, Va.; J. H. D. Rodier of the Grasselli Chemical Co., Cleveland, O.; C. H. McDowell of the Armour Fertilizer Works, Chicago, Ill.; Frederick Rayfield of Swift & Co., Chicago; Porter Fleming of the Southern States Phosphate and Fertilizer Co. of Augusta, Ga., and W. G. Sadler of Nashville, Tenn., members of the executive committee.

The Middle West Soil Improvement Committee of the Association includes C. A. Alling of Darling & Co., Chicago, Ill., chairman; Horace Bowker of the American Agricultural Chemical Co. of New York; J. T. Welch of the Welch Fertilizer Co., Columbus, O.; Gustav Jarecki, Jr., of the Jarecki Chemical Co., Cincinnati, O.; W. D. Huntington of the International Agricultural Corporation, Buffalo, N. Y.; DeWitt Brown of the Armour Fertilizer Works, Chicago; Frederick Rayfield of Swift & Co., Chicago; John D. Toll of the American Fertilizer, Philadelphia, and Henry C. Bell, agronomist, Chicago.

The officers of the Southern Fertilizer Association are William L. Peel of the Old Dominion Guano Co., Atlanta, Ga., president; D. B. Osborne of Atlanta, Ga., vice-president; Harvey Johnson of Atlanta, Ga., secretary-treasurer; T. N. Stewart of the Armour Fertilizer Works, Atlanta, Ga.; Frank Burbidge of the Etivan Fertilizer Co., Charleston, S. C.; C. F. Burroughs of the F. S. Royster Guano Co., Norfolk, Va.; S. D. Crenshaw of the Virginia-Carolina Chemical Co., Richmond, Va.; S. Eastland of the Meridian Fertilizer Factory, Meridian, Miss.; Porter Fleming of the Southern States Phosphate and Fertilizer Co., Augusta, Ga.; A. J. Ives of Willcox, Ives & Co., Savannah, Ga.; William Prescott of the American Agricultural Chemical Co., New York; A. C. Reed of the Read Phosphate Co., Savannah, Ga., and W. L. Peel of Atlanta, Ga., executive committee.

President Peel is ex-officio a member of the Soil Improvement Committee of the Association, which includes T. N. Stewart of Atlanta, Harry Hodgson of the Empire State Chemical Co., Athens, Ga., and W. Ellison Richards of the Virginia-Carolina Chemical Co., Atlanta.

\*From a paper read before the Fertilizer Mixers' Association of Georgia at Atlanta.



PANORAMIC VIEW OF THE CITY AND HARBOR OF CHARLESTON, S. C.

## For Charleston's Industry and Trade

By A. D. OLIPHANT.

Illustrative of the spirit animating the city of Charleston in new railroad developments is the fact that the citizens agreed to the imposition of a special tax of 10 mills for one year to buy the 60-foot right of way through the city, which has been transferred to the Norlina Construction Co. under the recent agreement between the city, the Holston Corporation and the C., C. & O. Railroad. In return for its enterprise the city will get a new railroad, become an important coaling port and have erected within its limits modern coal terminals.

The Atlantic, Gulf & Pacific Dredging Co. of New York began last week preliminary work for this terminal, its contract involving the construction of large docks around about 70 acres of land to be used for the terminal site. There is to be a pier 850 feet long, with deck of concrete cap on concrete piles. The pier is to be anchored to the base of a concrete tunnel, supported on wooden piles, and the necessary fill will be retained by concrete sheet piles. Among the contracts is one for dredging 600,000 square yards, and Ward Crosby of Johnson City, Tenn., engineer of the Holston Corporation, has considered bids for this work.

It is understood that the storage bins to be constructed will have an aggregate capacity of 650,000 tons of coal, and that the mechanical equipment to be installed on the coal pier will be capable of loading vessels at the rate of 1000 tons of coal per hour. The plans and specifications are being furnished by the J. W. Frazier Company of Cleveland, O., the engineer in charge, which recently was considering proposals for

constructing the pier. The contracts, involving the purchase of properties and constructing this coal-handling terminal, will approximate \$1,100,000.

The building of the coal terminal shows that one important railroad is awake to the fact that Charleston is only 1507 miles from the Panama Canal, and will double and treble in importance as a port of call, once the big ditch is wide open and the trade lines in the Western Hemisphere are changed. The channel in Charleston harbor has 33 feet of water at the shallowest place at high tide. The whole North Atlantic fleet crossed its bar with ease not many months ago. Since that time many improvements have been made in the harbor. Deep water continues for a long way up Cooper River, on which the Clinchfield coal terminals are to be built, and vessels of heavy draft can load as far up as North Charleston with ease. The Stonega Coal & Coke Co. has acquired considerable frontage along the Cooper River at a cost of \$100,000. The announcement of its plans is eagerly awaited in Charleston.

Under the leadership of the members of the Chamber of Commerce, a corporation has been formed in Charleston to give substantial inducements to industrial and manufacturing plants to locate in the city. The corporation will begin active operations in the fall, having mapped out a plan which promises success.

Charleston is expected soon to advance its splendid reputation as a distributing point. Eighty-nine wholesale and jobbing concerns are doing an active business, conservatively estimated at \$30,000,000 annually. Charleston is also an industrial center of importance,

with 145 enterprises employing 9923 men. The city is headquarters for this division of the railway mail service and headquarters for the Sixth United States Light-house District. There are about 1000 retail stores in Charleston, according to figures furnished by the Chamber of Commerce. Famous King street is the center of the shopping district.

The capital invested in manufacturing plants in Charleston amounts to about \$22,000,000. About 10,000 persons are employed in the plants. The United States Government has invested about \$4,000,000 in its navy-yard on Cooper River, where nearly 1000 civilians are on the payroll.

Charleston is one of the chief fertilizer manufacturing cities of the world. It has 14 plants in active operation, whose annual product is worth about \$8,000,000. The total capital invested in the business in Charleston is \$5,869,944. The industry gives employment to 3000 people, whose salaries amount annually to over a million dollars.

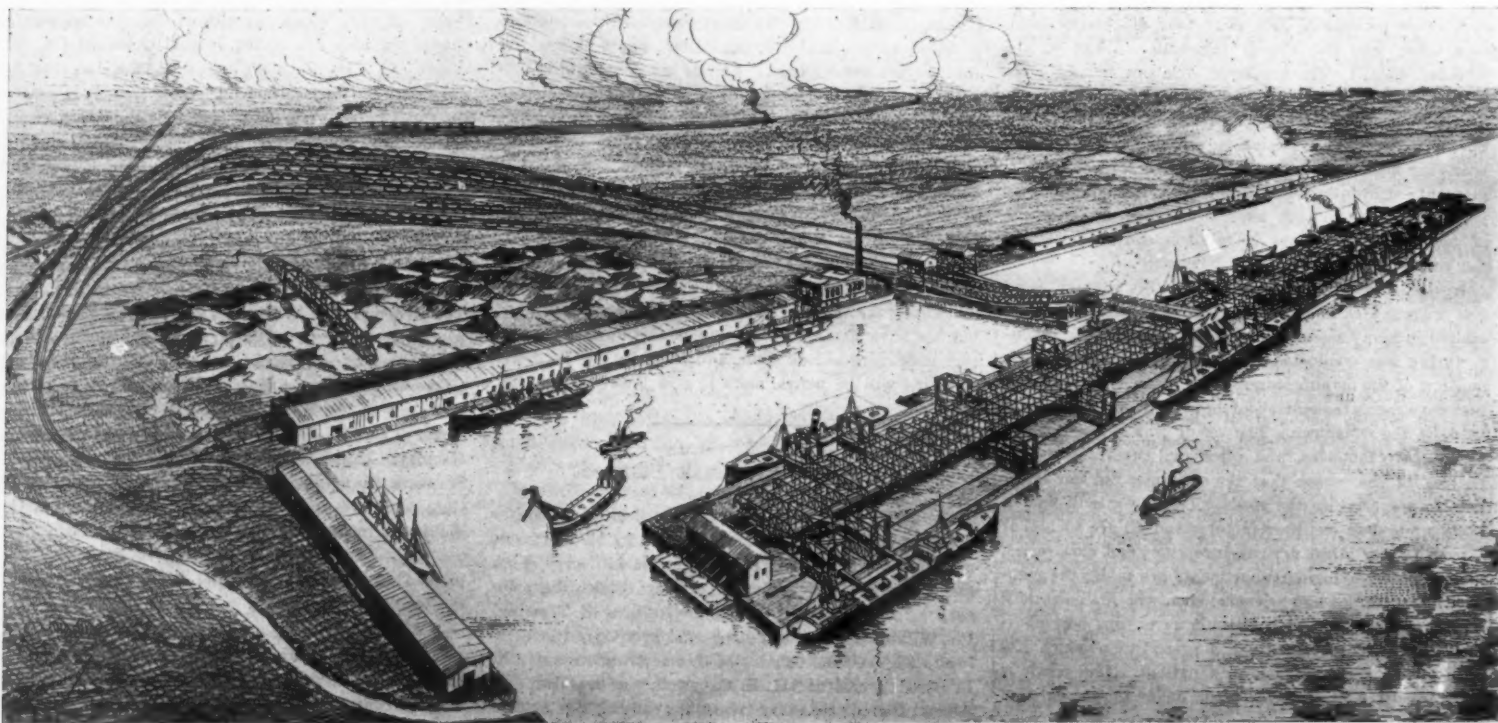
Following is a list of the fertilizer plants in Charleston and the names of their officers:

Combache Fertilizer Co., Norman H. Blich, president; Walter Pringle, vice-president and treasurer; R. William Molly, general manager; Charles S. Dwight, Jr., secretary; capacity, 60,000 tons.

American Agricultural Chemical Co. (Ashpoo plant).

Etiwan Fertilizer Co., F. Burbidge, president; Chas. H. Drayton, vice-president; Wm. J. McCormack, treasurer; W. Hampton Logan, secretary; capacity, 40,000 tons.

Peruvian Guano Corporation, Edmund Strudwick Nash, president; Thomas Armstrong, vice-president; Selden Walke, treasurer; Thomas Armstrong, secre-



BIRD'S-EYE VIEW OF COAL-HANDLING PLANT AT CHARLESTON, S. C., OF THE HOLSTON CORPORATION.  
(According to plans of the J. W. Frazier Company of Cleveland, O.)





CHARLESTON. FLEET OF UNITED STATES BATTLESHIPS IN COOPER RIVER.

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tary; Edmund Strudwick Nash, Jr., manager; capacity, 40,000 tons.

Germofert Manufacturing Co., W. B. Chisolm, president; D. G. Dwight, secretary, treasurer and manager; capacity, 20,000 tons.

Interstate Chemical Corporation, W. B. Chisolm, president; F. B. Tilghman, vice-president; Charles S. Bryan, treasurer; John D. Muller, secretary; capacity, 60,000 tons.

The MacMurphy Company, M. V. Haselden, president; W. C. MacMurphy, treasurer; capacity, 25,000 tons.

Molony & Carter Company, H. A. Molony, president; Patrick Carter, treasurer; John T. Roddy, secretary; capacity, 20,000 tons.

Planters' Fertilizer & Phosphate Co., W. H. Welch, president; J. Alwyn Ball, vice-president; J. D. Koster, treasurer; J. Ross Hanahan, manager; capacity, 60,000 tons.

The Quinnepiac Company.

Read Phosphate Co., A. C. Read, president; I. M. Read, vice-president; K. M. Read, secretary and treasurer; capacity, 80,000 tons.

Southern Cotton Oil Co., L. W. Whiting, local manager; capacity, 20,000 tons.

Virginia-Carolina Chemical Co. (sales office).

Wulbern Fertilizer Co., A. C. Tobis, president; J. H. C. Wulbern, vice-president and secretary; E. N. Wulbern, treasurer; capacity, 25,000 tons.

Some of the finest truck lands in South Carolina's rapidly-developing trucking belt are on the islands near Charleston and in the district within a radius of a few miles inland. According to figures compiled by W. McLeod Frampton, agricultural secretary of the Chamber of Commerce, crops grown in Charleston county amount annually in value to \$5,400,000. Among the most successful truck crops grown around Charleston are Irish potatoes, cabbages, cucumbers, beans, peas and sweet potatoes. A thousand acres near Charleston are in pecan orchards. The annual yield of pecan nuts from these is something like 100,000 pounds.

It is believed that in the near future the construction of a 30-mile interurban line between Charleston and Summerville, the famous winter resort, will be begun. John A. Hertz of Charleston is president of the interurban company, which was chartered about a year ago. The Charleston Consolidated Railway & Lighting Co., of which P. H. Gadsden is president, is also contemplating extending its line from the navy-yard three miles to North Charleston, where important suburban developments are being carried through under the leadership of R. Goodwin Rhett, president of the People's National Bank and twice Mayor of Charleston.

James Sotille, president of the Charleston-Isle of Palms Traction Co., has lately started operating a number of automobile trucks in the truck gardening section. These automobiles cover a territory daily of 40 square miles, hauling the produce to the shipping point at 12 cents per ton, giving the growers approximately a saving of 25 cents per ton in haulage. This automobile service has proved so successful that Mr. Sotille intends to extend it. He will build about two more miles of electric railway, bridge Shem Creek and make the terminals of his line in Charleston harbor instead of at Mt. Pleasant, if he carries out his present plans. The Charleston-Isle of Palms Traction Co. has just completed the laying of a submarine power cable from Charleston across the harbor, delivering 1500 horse-

power and 6600 volts, which will be used for operating the traction line from Mt. Pleasant to the Isle of Palms, lighting this popular seaside resort, the United States

reservation on Sullivan's Island and various villages. The additional power will take care of the proposed extension of the traction line.

## Potentialities of Louisiana's Wet Lands

By ALBERT PHENIX.

Much valuable advertising for the farm lands of Louisiana will doubtless be secured through the visit to that State of the representatives of a score of the leading agricultural papers of the country. The trip was planned by the State Department of Agriculture and Immigration, and in response to invitations sent out a number of the most prominent agricultural editors in the country appeared in person. Ten days have already been spent in visiting plantations and reclaimed lands throughout Southern and Southwestern Louisiana, the party being under the direct pilotage of E. O. Wild, editor of the Gulf States Farmer.

With almost no exception, the visitors were strangers to Louisiana conditions. They have taken sufficient time to familiarize themselves with soil, climate, markets and other features relating to the agricultural situation in Louisiana, and great surprise has been expressed over the possibilities which have been demonstrated. Trips have been made to old plantations, where problems of crops to supplant sugar-cane have been considered and visits have also been made to various reclamation projects in the country surrounding New Orleans. All of the drainage developments were exceedingly interesting to the visitors, who frequently expressed themselves with enthusiasm over the richness of the soil and the possibilities for all sorts of agricultural activities, including stock-raising and dairying. It is considered inevitable that the reports carried back by the visitors and the comments made personally and through their publications will be of great benefit to Louisiana.

The visit of these experts at this time lends added interest to a late Government report on the wet lands of Louisiana.

Louisiana is exceeded only by Florida in the area of what are improperly classed as swamp lands. A more accurate term is wet lands. Out of Louisiana's 45,420 square miles, 15,930 square miles, or 35 per cent., are lands of such description. As these lands are of unsurpassed fertility when drained, their utilization has long been conceded to be an improvement of great importance to the future wealth and prosperity of the State, as well as a potential asset of great value to the whole nation.

For many reasons, therefore, much interest is attached to "The Wet Lands of Louisiana and Their Drainage," the subject of a bulletin, No. 71, recently issued by the United States Department of Agriculture. It is in the form of a professional paper by Charles W. Okey, drainage engineer, and is 82 pages in extent, with numerous charts, tables and maps. The large and increasing interest in these phenomenally fertile lands, together with the absence of any official report on the character of the lands and the methods of bringing them into cultivation, was the situation met by the office of experiment stations, United States Department of Agriculture. The bulletin is issued under authority of A. C. True, director. The drainage investigations have been carried on for

about four years in Southern Louisiana, where increasing activity in drainage operations has been noted for a number of years.

The work reviewed in the bulletin covered an area on the Gulf coast south of a line drawn east and west through Baton Rouge, a district containing about 12,000 square miles. About 10 per cent. of this land is high enough to be drained by gravity, and this represents the area which has been drained and cultivated for many years—some of it for 150 years or more. On these lands were located the great sugar plantations of Louisiana. In various parts of the lowlands, which are in a condition of greater or less saturation, mainly by rain water that does not run off, are to be found the drainage operations which have been inaugurated in recent years.

The purpose of the Government work under review has been (1) To study the soil, climate and other natural conditions, with special reference to the drainage problems encountered and the value of the land for agricultural purposes when successfully drained. (2) To collect such technical data and to examine such details of present practice as will afford information of value to landowners, and especially to engineers interested in the reclamation of such lands. (3) To disseminate in available form the results of the investigations and to encourage land drainage by emphasizing the benefits to be derived from bringing such lands under cultivation.

The work in this field was started in 1909 by Prof. W. B. Gregory of Tulane University, New Orleans, and A. M. Shaw, then a drainage engineer in the employ of the Government, but later identified with one of the important drainage projects near New Orleans. It was continued under their direction until early in 1910, when C. W. Okey, drainage engineer, was placed in charge. Certain lines of investigation have been carried forward continuously since 1909. The scope of the bulletin is:

First, a description of general conditions in this section of the State, of such a nature and in such detail that persons unfamiliar with this or similar sections of the country will be able to form a fairly accurate idea of the nature of the problems encountered in the successful drainage and cultivation of these swamp lands.

Second, a statement and brief consideration of some of the larger drainage problems encountered, emphasizing the need of more complete co-operation between the various interested parties in the study and solution of such problems.

Third, the results of detailed examinations of a number of drainage districts, reclaimed or in process of reclamation, and a summary of such results.

Fourth, a consideration of the problems involved in land drainage by means of pumps in Louisiana.

Only a brief mention of various features of the bulletin can be made here. A study of the publication in full will be well worth while to anyone interested in

the subject. Announcement is made that copies of the publication may be obtained from the superintendent of documents, Government Printing Office, Washington, D. C., at 15 cents a copy.

Referring to the temperature of the coast country, United States Weather Bureau statistics are quoted to show the modifying effect of the Gulf and the numerous streams and lakes on the heat of summer and cold of winter. Along the coast there is no record of 100 degrees of heat, and as far north as New Orleans there have been only two years in 39 years when 100-degree weather was experienced. The temperature reaches 90 at New Orleans every summer, but there have been 14 years out of the past 39 when it did not reach 95, and in 36 years there were only 78 days when the maximum temperature rose to or above 95 degrees at New Orleans. As a matter of fact, as is testified by those who have summered there, New Orleans, with its absence of extremes and sudden changes, has many weeks in every summer when there is much less discomfort than in places as far north as the Canadian border. The summer season is a long one, and there are records of 80-degree weather and upward for every month in the year, but the hottest day New Orleans ever knows is much below the temperature of the hottest day experienced by the cities of the North.

Freezing temperatures usually occur in the coast country in January and February, although the minimum temperature has been below 32 degrees at New Orleans only 131 days in 36 years, or an average of less than four times a year. During 36 years the temperature at New Orleans has fallen below 20 degrees in only four years—1880, 15 degrees; 1895, 16 degrees; 1880, 7 degrees; 1905, 18 degrees. Weather Bureau warnings minimize the losses whenever these low temperatures approach.

There is an average annual rainfall in the coast section of 55.76 inches. June and July are usually the wettest and October and November the driest months. Summer rains are more or less tropical in character, being nearly always local, so that the amount, both daily and monthly, may vary considerably at stations separated by only a few miles. Although droughts may occur, they are likely to be restricted in area, are never long continued, and are not so serious as in regions where the level of the ground water is much farther below the level of the earth.

As to health conditions, a United States Bureau of Soils report is quoted as saying that the records of the Medical Board of New Orleans show that the city has an excellent health record, the impression as to its unhealthfulness having no foundation under the conditions of today. Yellow fever has been eradicated, and with present methods of treating the disease and preventing its spread, it is not to be dreaded as formerly, even should a case occur. Malaria, it is stated, though occasionally occurring, is not dreaded. "Since it has been demonstrated that malaria, like yellow fever, can be transmitted to man only through the bite of a certain species of mosquito, it may be expected that drainage, which destroys the breeding places of these pests, will result in a decrease in whatever malaria may now exist. As a matter of fact, malaria fever is very rare on the immediate coast line, and the health of the people from the North seems to be fully as good as that enjoyed by the natives."

There is no question that the bugbear of unhealthfulness has been detrimental to the development by Northerners of the far South, and if official Government reports will set people to investigating, much good will be done in the direction of helping to annihilate this fallacy.

The origin, formation and character of the soils of the delta region is the subject of extensive consideration. A large part of the area has been built up by river deposits. In periods of normal flow it is regarded as probable that there was little sedimentation of the river bed except at its mouth. Thus the area was built up throughout the ages by a gradual pushing out of the land formed by sedimentation at the river's mouth, once far above Memphis. The process is exemplified by the building up of land at the many mouths of the Mississippi today. Coarser and heavier materials were deposited in ridges at the sides of the channels, forming river banks. At times of extreme high water there was a general breaking over the banks of the river and its outlets, which process resulted in the building up of the low marsh lands. The ridges or banks of various streams were widened at times of flood, and were joined at places, forming the various lakes the area contains. With the construction of the artificial levee system, which prevents the general flooding of the lands that

formerly occurred, the upbuilding of the marsh lands by river silt has ceased, and only decaying vegetation is building up these lands. Captain Eads is said to have declared that if the delta country had not been occupied till several hundred years later the overflows would have done so much upbuilding work that many of the problems of river control and drainage would have been solved by nature.

Yazoo sandy loam, Yazoo loam, Yazoo clay, Sharkey clay muck and Galveston clay are given as the various types of soil found in this section. The Yazoo classes are ridge soils, sufficiently elevated to drain naturally, and are practically all well drained and under cultivation. The last three classes include practically all the undrained soils of the section, and much consideration is given in the bulletin to their characteristics and the methods of treatment. Results of soil tests in various localities are given in tabulated form, with explanatory text.

Sugar-cane, rice, corn, forage crops and truck have been raised principally, with large areas near the coast planted in oranges and other citrus fruits. "From observations on the various reclaimed districts," says the bulletin, "it would appear that all crops grown on the older lands bordering on the river can be successfully grown on the prairie lands. The lands just recently brought under cultivation are much more fertile than these older lands, and with intelligent farming should not require an application of fertilizer for a long term of years."

In the matter of drainage, present methods are fully discussed, and it is pointed out that as operations are extended the necessity will become imperative for a general survey of the district, covering topographic and hydrographic features. The present method is to throw up levees around a district, of from several hundred to several thousand acres in extent, and pump the surplus water off, allowing it to seek some bayou that leads into the Gulf. Up to this time little attention has been given to the problem of the disposal of the drainage water after it is pumped over the levees. With the increase in the number of such operations some comprehensive plan for co-operation and correlation will become necessary, in order to carry all the water to the Gulf, the report points out.

Detailed descriptions are given of a number of reclamation projects. A large number of districts were examined closely, and practically every district within the State has been inspected. From the drainage engineers' standpoint, it is declared, the work has passed the experimental stage, and by following the best methods used on existing districts the successful drainage of the average type of wet prairie lands seems assured. Owing to the comparative newness of the work, however, there are yet problems that will have to be more satisfactorily worked out. The size of levees, reservoir canals, ditches, laterals and size and type of pumping plants are fully discussed in a section comprising the major portion of the pamphlet, and reports of inspections are given in great detail. Much practical and technical information, of interest and value to owners and operators and to engineers engaging in the work, is presented in the reports, and conclusions and suggestions given. Where successful drainage has not been attained it is attributed to insufficient and poorly constructed improvement rather than to inherent and insurmountable difficulties. Without the advice and services of an engineer the work in some districts, even when successful, was not secured with the greatest economy. The usual cost of reclamation varied from \$25 to \$35 an acre.

The value of the land, more or less speculative in its original state, varies according to the completeness and permanence of the drainage improvements, as well as according to its original character, so the bulletin states. Usually the first crop planted is corn, frequently drilled in by a drill attached to the tractor plow at the time of first plowing. A crop of 30 bushels an acre or more has been raised without further cultivation. The soil seems suitable for any kind of truck, which may be planted after the first year with excellent results. Raising 40 to 60 bushels of corn to the acre, according to the bulletin's conservative report, there would appear to be ample ground for the declaration of Louisiana landowners that prices of Louisiana farm lands must shortly reach the level of Illinois corn lands. Others believe the day will some time come when, with drainage completed, Louisiana lands will be considered too valuable for staple crops, and that the coast country will be largely transformed into a vast truck garden, supplying foodstuffs to all the people in the land.

## CONSERVATION IN COKE-MAKING.

### Alabama Gives Striking Illustration of Its Advantages.

The figures of the United States Geological Survey show a large increase in the coke production in Alabama in 1913. The output increased from 2,975,480 short tons, valued at \$8,098,412, in 1912, to 3,323,664 tons, valued at \$9,627,170, in 1913. The gain in quantity was 348,175 tons, or 11.7 per cent., and in value \$1,528,758, or 18.9 per cent., according to figures compiled by Edward W. Parker of the Federal Survey, in co-operation with the Alabama Geological Survey. All of this increased production, and more, was in the output of retort-oven or by-product coke. There are in Alabama four retort-oven establishments, with a total of 700 ovens, and in 1913 they produced 2,022,959 tons of coke, or a little more than 60 per cent. of the total output, whereas 22 active beehive plants, with an aggregate of 4135 ovens in blast, produced 1,300,705 tons, or a little less than 40 per cent. of the total. The average production per oven in the by-product plants was 2890 tons, and the average production for each beehive oven was 212 tons.

The increase in the production of by-product coke in 1913 over 1912 was 673,162 tons, or nearly double the total amount of increase, the value showing an increase of \$7,751,538, or \$232,780 more than the total increase. Moreover, the average yield of coal in coke from the retort ovens was 71.4 per cent., whereas the average yield in the beehive ovens was 54.5 per cent.

The production of coke in Alabama in 1880, 1890, 1900 and annually, from 1909 to 1913, is shown in the following table:

MANUFACTURE OF COKE IN ALABAMA, 1880-1913.

Year.	Coke produced (short tons).	Total value of coke at ovens.	Value of coke at ovens per ton.
1880.....	60,781	\$183,063	\$3 01
1890.....	1,072,942	2,589,447	2 41
1900.....	2,110,837	5,629,423	2 67
1909.....	3,065,824	8,068,267	2 61
1910.....	3,249,027	9,165,821	2 82
1911.....	2,761,521	7,593,594	2 75
1912.....	2,975,489	8,098,412	2 72
1913.....	3,323,664	9,627,170	2 90

What is lost to a State in not thus utilizing its own coke-making coal is emphasized for West Virginia by the facts about Indiana and Illinois.

The production of coke in Indiana in 1913 was 2,727,025 short tons, valued at \$13,182,136, which was an increase over 1912 of 110,686 tons in quantity and \$653,451 in value, and over 1911 of 1,810,614 tons in quantity and of \$9,583,941 in value, according to E. W. Parker of the United States Geological Survey.

All the coke made in Indiana is the product of retort ovens, and most of the coal used is brought from West Virginia. Indiana assumed importance in the manufacture of coke in 1911, when a portion of the United States Steel Corporation's plant at Gary was completed and put in blast. The entire plant was completed in 1912, and Indiana, from a relatively low place in the rank of coke-producing States in 1910, advanced to third place, outranking West Virginia, upon whose mines the ovens in Indiana depend for the greater part of their coal. The plant at Gary consists of 560 Koppers ovens, which in 1913 produced 90 per cent. of the entire output of the State. The total number of ovens in the State at the close of 1913 was 749, and 41 were under construction. Ten of the old, wasteful beehive ovens at Black Creek were abandoned. The 749 ovens had an average production of 3670 tons of coke and an average yield of coal in coke of 77.1 per cent.

As in Indiana, all the coke made in Illinois is the product of retort ovens, which draw most of their coal from West Virginia mines. A common practice is to mix the West Virginia coal with Illinois coal in the proportion of 4 to 1. The mixture is ground fine, and has been found to make an entirely satisfactory coke, with a yield of coal in coke of approximately 75 per cent. There are four establishments with a total of 568 ovens, all of which were in operation during the year. There were 58 new ovens in construction at the end of the year, 40 at South Chicago and 18 at Joliet, both installations being additions to plants already established.

The production of coke in Illinois increased from 1,764,944 short tons, valued at \$8,069,903, in 1912, to 1,859,553 tons, valued at \$8,593,581, in 1913, a gain in quantity of 94,609 tons and in value of \$523,678.



# To Limit Oklahoma's Oil Production

By CLARENCE B. DOUGLAS.

From a total production of 37 barrels of crude oil in 1895 to a production of 316,000 barrels per day for the week ending June 27, 1914, tells the story of what is the matter with the oil business in Oklahoma at this time. When the annual production for 1913 reached more than 63,000,000 barrels it was thought Oklahoma oil fields had touched the high mark, and with the price at \$1.05 per barrel and a market for every barrel produced the operators were feeling well satisfied with themselves and the world generally.

A feverish stampede to get into the oil business set in, and the wild-cat drillers began punching holes in the ground miles from production, and the limits of the known oil territory were extended in every direction. One of the results of this boom in the oil game was the discovery and development of the Haldon pool, a few miles west of Ardmore, in Carter county, which soon had a daily production of 20,000 barrels. More important, however, than the discovery of the Haldon field was the fact that the operators in the Cushing field, in Creek county west of the great Glenn pool, happened to be wealthy, and, not being satisfied with small wells making 15 and 20 barrels from the Layton sand, one of these operators ordered his drillers to start a drill for China or the Bartlesville sand. According to the geologists, the Bartlesville sand should be found in this locality at near 3000 feet, and the expense of drilling to this depth had prevented the experiment heretofore, and to say that the pioneer in deep drilling was anxiously watched by other operators is drawing it mild. The log of the well justified the sheet of the geologist, and not only was the Bartlesville sand found where predicted, but the first drill to penetrate it opened up an oil pool that is today producing 149,000 barrels every 24 hours. As a result of this initial deep well, which came at more than 100 barrels per hour, all the other owners of leases in this field began deep drilling, and in a very short time the production swamped the capacity of the pipe lines. An immense amount of tankage was provided, but faster than it could be erected new wells making from 2000 to 5000 barrels per day were brought in, and soon the market was glutted, all available storage filled and the pipe lines utterly unable to handle the output.

Then came the announcement of the Prairie Oil & Gas Co., a branch of the Standard Oil Co., and the largest purchaser of Oklahoma oil, of a cut in the price of crude oil to \$1 per barrel, and overproduction was given as the cause. With startling regularity cut followed cut, each being five cents per barrel, until the price for oil produced in the fields of Northern Oklahoma and Kansas dropped to 75 cents, where it is at this date. The operators in the Haldon field awoke one morning to find that at one swoop the Magnolia Company, their principal purchaser, had slashed the price 25 cents, and, before they recovered from the shock, the market was down to 50 cents. To make matters worse for the operators, the purchasing companies would only take 75 per cent. of the production even at the reduced price, and in a very short time anticipated profits fell off to such an extent as to create a panic among producers, large and small. Then it was that efforts were made to get relief from Washington, either by legislation or through the Department of the Interior, by regulations, rules or Indian office orders, and to get first-hand information Indian Commissioner Cato Sells visited Oklahoma and made a personal inspection of the oil fields.

In the meantime, the State Corporation Commission was appealed to and Commissioner Henshaw held a series of meetings with the producers and the representatives of the purchasing companies and pipe lines for the purpose of finding some solution of the difficulty. Carefully feeling his way along lines where there were no precedents to guide and probably no law to sustain him, the commissioner issued several orders affecting future cuts in price, requiring advanced notice to the operators, proportioning the percentage of oil run pro rata among the exclusive producers, and that of the production of the pipe line companies, making agreements among large operators to suspend drilling on inside acreage and limiting the drilling along outside lines except where necessary to protect the property from being drained by offset wells. Some of these orders and agreements have been lived up to and some have not.

The following resolutions were adopted by 500 producers and a number of pipe-line representatives in

convention at Tulsa, June 24, and ushered in a new epoch in the oil industry of the world and conclusively proved that when oil men get together in the right spirit they can come to some agreement:

"We believe that the arrangement and agreement entered into and followed by the order of the State Corporation Commission of May 6, 1914, should be continued in full force and effect.

"That the present production of the oil is greater than the transportation facilities of the transportation companies in the field, and we believe the production should be limited to the amount which can be handled by the pipe-line companies. To that end we recommend the cessation of all drilling and agree and consent to an order by the Corporation Commission prohibiting drilling in this field for a period of 90 days. That this order should contain a provision that upon good cause shown any producer may be exempted from the order for the protection of his lines or where the life of the lease is endangered by delay.

"We petition the Corporation Commission to make an order that no pipe line or transportation company shall hereafter be required or permitted to connect with any new wells hereafter drilled.

"That from and after this date we will limit the production of oil by all proper and legal means to the capacity of the transportation companies now or hereafter in the field, and endeavor to supply sufficient oil to fully meet all the demands of the market.

"We believe by doing this we will get the producer a fairer price for his oil and at the same time, by producing daily and steadily a fixed amount of oil, will give to the consumer a cheaper refined product at a stable and certain price.

"We believe that the storage of oil in steel tanks is expensive, and that the ultimate consumer must finally pay for the same. We believe that a vast production of oil beyond the capacity of transportation tends to exhaust the fields and finally raises the price of the refined product to such an extent that the ultimate consumer will pay for all expenses of steel tank and waste.

"We appeal to the oil producers of the Mid-Continent field to stand together in this matter, that the interests of all producers and the owners of lands any royalties be conserved and safeguarded, and we believe that the only practical way to accomplish this result is by limiting the production to the actual capacity of the various transportation systems."

Commissioner Henshaw issued on June 30 a long order, concluding as follows:

"It is therefore ordered that the Texas Company, the Gulf Pipe Line Co. and the Prairie Oil & Gas Co. shall be relieved as common purchasers from taking the production of any new wells brought in on and after the first day of July, 1914, except upon the following conditions:

"Where lease conditions require wells to be drilled by a definite date, such wells shall be drilled on the lease at a point where it will not be necessary for adjoining properties to offset the same.

"Where properties have no production and adjoining properties may have a tendency to drain the same, even though they would not come strictly under the offset rule.

"All wells now in process of drilling, except such wells as require other new wells to be an offset, drilling shall be continued on such wells.

"All wells necessary for existing offsets.

"Such drilling as may be necessary on short-term leases to comply with Federal Court orders where receivers have been appointed, all of which, together with any special case where in fact inequity or injustice may be done by compliance with the above rules, will be handled especially by the Commission and determined at the time the parties desire to begin drilling.

"The owners of all producing properties in the Cushing district shall file a plat showing their producing wells and such wells as are contemplated to be drilled under this order, with the Corporation Commission in the office of A. E. Watts, the oil umpire of the Cushing field, at 203 Clinton Building, Tulsa, Okla. All plats shall be filed by July 10, 1914.

"The pipe lines are relieved of running oil from any well that is hereafter squibbed or shot in the Bartlesville sand in the Cushing field during the period of this exemption.

"The pipe-line companies shall be relieved from taking

oil from any new well that may be drilled under the above exceptions if the same penetrates the Bartlesville sand in the Cushing field more than 60 feet, without the approval of the Corporation Commission for drilling the sand to a greater depth.

"All special cases not coming under the above exceptions may be submitted to the Corporation Commission at any time, and it is suggested that a committee of five be appointed in the Cushing-Bartlesville sand field, consisting of B. B. Jones, chairman; H. F. Sinclair, John H. Markham, Murray Doan, W. H. McFarland and the umpire, A. E. Watts, shall be ex-officio member of this committee.

"It is also suggested that a committee be appointed in the other fields or localities where it may be necessary to see that these orders are carried out, to recommend to the Commission such exceptions to the orders as may be equitable and just to all concerned, and the umpire, A. E. Watts, should be also an ex-officio member of each committee and may be called upon any time by the remaining members of the committee or when the Commission may deem his services necessary.

"Inasmuch as Providence has smiled so bountifully upon the producers of the Bartlesville sand in the Cushing fields, we believe that they can well afford to sacrifice some personal advantages which, to some extent, may have been acquired by their own diligence and conservatism, in order that this great industry might not fall into contempt by reason of the destructive production of crude petroleum."

The oil production of Oklahoma by years, according to the records of the United States Geological Survey, is as follows:

	Barrels.
1895.....	37
1896.....	170
1897.....	625
1898.....	1,020
1899.....	2,230
1900.....	6,472
1901.....	10,000
1902.....	37,300
1903.....	138,911
1904.....	1,366,748
1905.....	8,562,716
1906.....	18,618,583
1907.....	43,524,128
1908.....	45,798,765
1909.....	47,859,218
1910.....	52,028,781
1911.....	56,069,637
1912.....	51,427,071
1913.....	62,500,000
Total.....	377,947,805
1914 (estimated).....	100,000,000

The price of oil per barrel in Oklahoma since 1908 is as follows: January, 1908, 41 cents; January, 1909, 41 cents; January, 1910, 35 cents; January, 1911, 44 cents; January, 1912, 54 cents; January, 1913, 80 cents, and January, 1914, \$1.05.

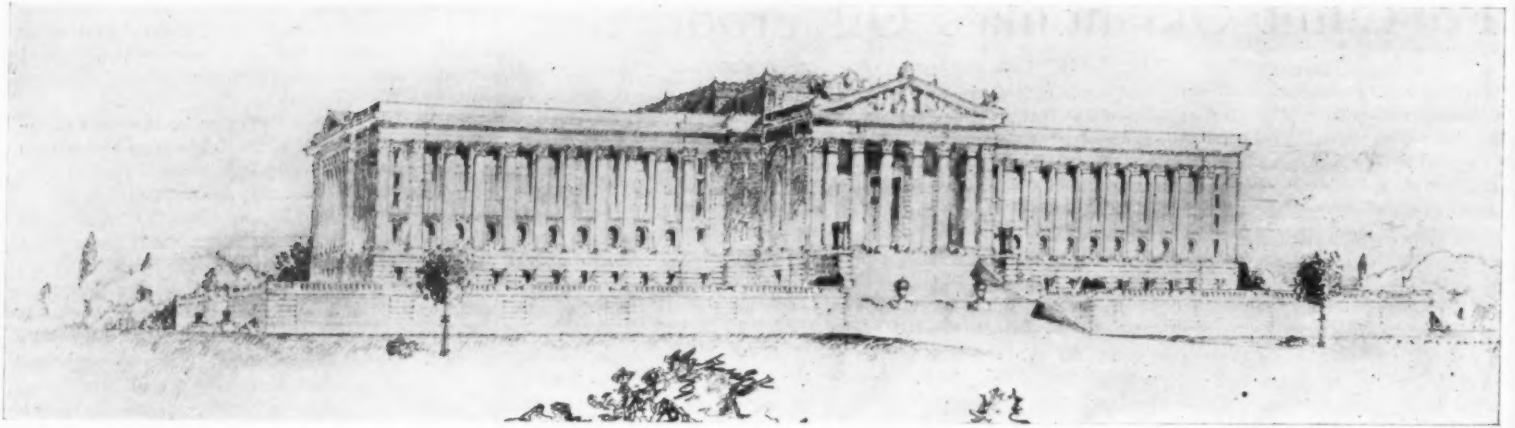
At 7 o'clock on the morning of July 1 the Prairie Oil & Gas Co. had in storage tanks and lines in Oklahoma 46,032,815.82 barrels of oil.

## For Manufacturing High Explosives.

The E. I. du Pont de Nemours Powder Co., Wilmington, Del., has completed its high explosives factory, under construction for some months past at City Point, near Petersburg, Va. This plant is known as the company's Hopewell Works, and is one of the largest for the production of dynamite in this country. It includes 1683 acres of land, on which have been erected about 80 plant buildings, 23 dwellings and one boarding-house, and the company has another dwelling in City Point. The plant was designed and built by the company, the machinery for manufacturing having been designed and constructed in the company's shop.

## The Childrey Company.

The Childrey Company, Richmond, Va., will install blueprint paper-coating machinery, printing and drying equipment, etc., for producing blueprint paper, blueprints, drawings, etc., the hourly capacity to be from 1800 to 2000 square feet. It expects to have the only coating plant in the South and the largest printing capacity within a radius of 250 miles of Richmond. This company was incorporated last week with \$10,000 capital, and it has organized with officers as follows: M. A. Childrey, president and manager; A. L. Lord, vice-president; John C. Kinder, Jr., secretary-treasurer.



FRONT ELEVATION OF THE \$1,500,000 STATE CAPITOL AT OKLAHOMA CITY.

**OKLAHOMA'S CAPITOL BUILDING.**

Plans Adopted for an Imposing Structure to Cost \$1,500,000.

The Oklahoma State Capitol Commission, consisting of W. B. Anthony, P. J. Goulding and S. A. Douglas, has adopted plans for a State Capitol building to cost \$1,500,000, the architects being Layton & Smith of Oklahoma City. The plans contemplate a building with a frontage of 400 feet, with a central portico entrance 82 feet wide and 72 feet deep. The floor space of the building is sufficient to house all of the offices and State departments. The plans show a sub-basement of 10 feet in height, basement or ground floor 12 feet and first floor with a height of 26 feet. This last is divided into heights of 15 feet and 11 feet to take care of the mezzanine floor. The second and third floors are 12 feet. The following is from the letter of the architects submitting the approved plans to the commission:

In the sub-basement it is proposed to take care of all pipes, conduits, ventilating system, storage vaults, etc.

Upon the ground floor will be housed the Board of Agriculture, School Land Department, Attorney-General's offices and the library. The library stackroom will run from the ground floor through the first story and mezzanine floor, which will give ample room for five floors of book stacks, and will take care of a natural growth of the library for many years to come. Upon this ground floor are also the kitchen and dining-room and public toilets.

Upon the first floor will be a large Supreme Courtroom and two smaller courts for the Supreme Court division, Criminal Court of Appeals, judges' offices and separate stenographers' rooms to same to the number of 14, with lawyers' consultation and retiring-room, also judges' retiring-room to each court. On this floor are the Governor's offices, with a State reception-room, the offices of the Secretary of State, State Treasurer, Adjutant-General and State Reporter, with vault spaces located in the center of the building sufficient to amply take care of each office and in close connection to same; also exhibit-rooms for the Historical Society and Agricultural Department.

Upon the mezzanine floor to first floor are the Auditor's offices and the offices of the Board of Public Affairs; also offices for the State Superintendent of Public Instruction, Examiner and Inspector, and Clerk of the Court, with vaults for same located above the vaults below in the center of the building. There is also un-

assigned office space upon both the first and mezzanine floors to allow for future expansion of the State departments.

Upon the second floor are the Senate Chamber and House of Representatives, with 11 committee-rooms, varying in size, for the Senate and also the House. There are large retiring-rooms to both the Senate and House immediately off of each chamber; ample public and private toilets are also on each floor. There is in connection with the Senate Chamber private offices for the Lieutenant-Governor, President of the Senate and Secretary, with document filing-room, pressroom, telegraph-room and telephone-room. For the House of Representatives, besides the committee-rooms, are stenographers' private office, chief clerk, document and filing-room, pressroom and telegraph and telephone-room. The Corporation Commission is on this floor, in the rear wing, with a large courtroom, workroom, private offices and stenographers' room for each member.

Upon the third floor are the galleries to the Senate and House, two small committee-rooms to both Senate and House, offices for the Labor Commission, Fish and Game Warden, Commissioner of Highways, Commissioner of Charities, Fire Marshal, Mine and Oil Inspector, Election Board, Bank Commissioner, Board of Health and the Insurance Department; also a general boardroom, with unassigned space, with a large general assembly-room in which may be held teachers' examinations or conferences of any description. There are also two passenger elevators and one freight elevator running from the basement floor to the third floor.

It has been deemed advisable to so plan a building that at present does not necessitate a dome and can be finished in a complete manner, designed in a monumental type and with that dignity required for such a building, and at the same time, if it should be the desire of a future Legislature to add a dome to this building, it may be done without disturbing any of the internal arrangements.

For the exterior of the building has been adopted a Corinthian order of architecture, duplicating that as used on the "Portique D'Octavie," one of the simplest examples of this order. The exterior walls of the building will be treated as one large colonnade and the central feature emphasized with a portico leading directly to the center of the building and opening into a large rotunda, which will serve for a general distribution point to all the offices and floors. The exterior steps at the main entrance will lead directly to the first floor,

and on the inside of the building, directly at the entrance, will be a grand marble staircase 30 feet wide, leading to the second floor, where the legislative chambers are planned.

The central rotunda will be lighted from above with a large art-glass skylight and the finish throughout carried out with simplicity and plain lines. Simplicity will be the keynote of the finish throughout.

**Cornwall Clay Deposits.**

Cornwall Kaolin Co.,

New York, July 1.

*Editor Manufacturers Record:*

The writer has had recently called to his attention an article on "China Clay Deposit in North Carolina," by G. P. Grimsley, in your issue of June 18, 1914.

There is one statement in this article which is incorrect, and it should not be allowed to pass without correction. This is that the "Cornwall (English) clay is gradually being worked out."

The writer has absolutely no interest in English clays, and only wishes that the statement above quoted was correct. Having recently visited Cornwall in an examination of these clay deposits, I am in a position to state that the china clay area is constantly being increased. It is a peculiarity of these deposits that the clay does not give out in depth, and no pit has ever been discontinued on account of lack of clay in the bottom.

These Cornish clays are formed from a granite very free from iron. Some of the clays from these deposits are, therefore, remarkably white. There is no possibility that the competition from these English clays will lessen for many years, on account of their whiteness, the cheapness of the Cornish labor and the enormous size and extent of the deposits.

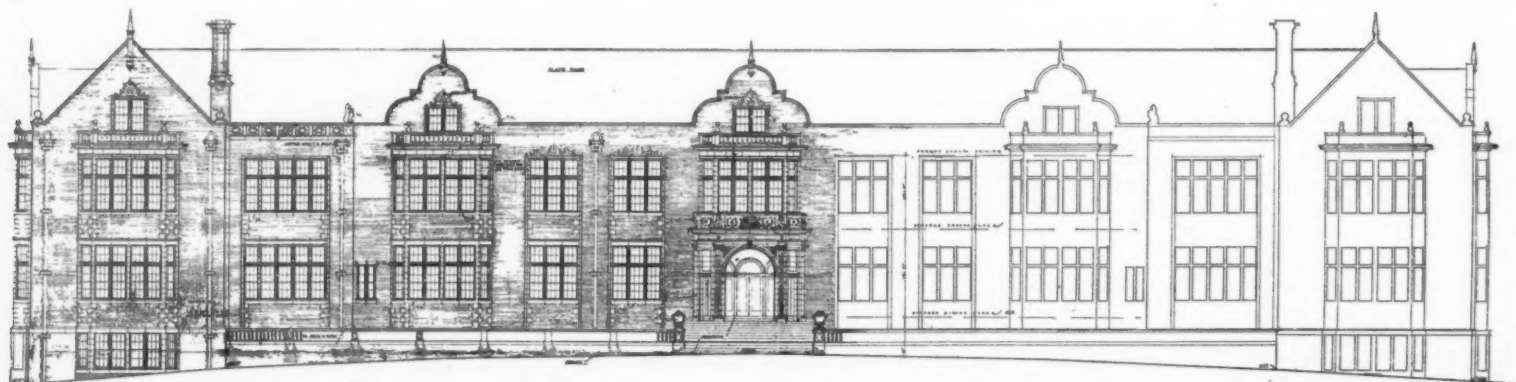
The market for yellow or off-color clays is limited, but a white clay which can compete with the best English clays is exceedingly rare in this country, and therefore most valuable.

The writer agrees with Mr. Grimsley that the present method of washing and drying kaolin is extremely elementary and from 10 to 15 years behind modern engineering practice.

Yours very truly,

NELSON BLOUNT,

Mining Engineer.



ADMINISTRATION BUILDING, MARYLAND STATE NORMAL SCHOOL, TOWSON, MD.

Under construction; main building 200x55 feet, with wings 14x46 feet and 90x38 feet; steel, marble, brick and stone construction; cost about \$275,000; architects, Parker, Thomas & Rice, Baltimore; general contractors, Morrow Bros., Baltimore.



# Hydro-Electric Power of the Ozarks

By TOM SHIRAS.

For a century men have been trying to harness and control 500,000 horse-power going to waste in the streams in the White River Valley of the Ozark Mountains. The largest turbine in that section now generates 4000 horse-power; the smallest, home-made, and constructed half a century ago from the butt of a cedar log, with hand-chiseled fans, generates four horse-power—a difference of 3396 horse-power in the development of man's ingenuity in that section in 50 years. While the idea is the same, there is a broad contrast in material used and method of construction and cost.

To grasp fully the greatness of Keokuk and other gigantic hydro-electric powers, and to see the embryo beginning of these tremendous forces, it is necessary to turn back the pages of history in water-power development or to step into some spot where primitive powers are still in use.

The Ozarks of Missouri and Arkansas offer a broad contrast for study of water-power development. The watershed of the White River is literally alive with mountain creeks and small rivers, where the murmur of dashing water never ceases. Each creek and river has its primitive water-power plants. Back off the beaten path in the heart of the mountains the primitive overshot wheel is furnishing power for sawmills. The primitive turbine at the foot of a sluice-box running from a home-made dam is grinding corn, and an undershot wheel in some swift shute is furnishing the power for a cotton gin. From this primitive development a half-day's ride brings one in hearing of the roar of the dam at the hydro-electric plant in the White River in Taney county, Missouri, or, if the horse's head is turned the other way, to Mammoth Springs, in Fulton county, Arkansas, where one of the largest springs in the world has been harnessed with modern machinery.

The smallest turbine in the Ozarks is turned by a stream of water running from an eight-inch sluice-box and generates four horse-power. The largest, a hundred times larger than the smallest, turns in a concrete tube eight feet in diameter in the Taney county plant, and is one of seven in the battery that generate 4000 horse-power each.

The smallest and most primitive turbine is on Spring Creek, in the heart of the Leatherwood range in Baxter county, Arkansas. It is home-made, as are also the dam, the power transmission, the turbine-box, the sluice and the corn-burrs. The latter were chiseled out of native rock by hand. From the dam of rocks, logs, brush and mud a sluice-box leads to the turbine-box. The wheel is half a century old, fashioned from a cut from the butt of a cedar log and strapped with iron, and is 20 inches in diameter. A stanchion 6x6 inches, with the sharp corners dressed, runs through the wheel, and is keyed and rests on a bearing in the bottom of the wheel-box. The stanchion runs upright through the floor of the mill and is held in wooden boxing to keep it steady, and to the upper end is keyed another 20-inch wheel made from cedar, from which the power is transmitted by a belt to the flywheel of the grist mill. The power is controlled by a water gate in the sluice-box. For 50 years this power has ground corn and furnished the meal for the community of mountaineers in which it is located. Owing to the small power it generates and its small capacity, it has been run nearly perpetual day and night since it was constructed to fill the demand of the community.

The turbine is not supreme in primitive development. The overshot wheel, in fact, is the favorite among the mountaineers, because it furnishes the most power. The average 20-foot wheel generates from 12 to 20 horse-power, according to the head of water. The wheel sets on an axle at the side of the mill building, and a flume carries the water from the head in the pond above and pours it off on the wooden buckets on the face of the wheel. The wheel moves slowly at first and then with regularity. The weight of the wheel furnishes much of the power after it gets started in the same manner as the flywheel on an engine. The power is generated from the wheel to the main shaft by a system of cogwheels. The undershot wheel works on the same principle, except that it sits in the sluice and gets its power from underneath.

The wheel, the first idea conceived as a way to develop water-power by someone centuries ago, is still the paramount factor in modern development. It has passed through many stages of construction, but the shape has never been changed. The greatest changes between modern and primitive have been the greater magnitude of

the modern, better and more lasting material, and different methods of power transmission and control.

The largest water-power plant in the Ozarks to be installed to date is the large plant lately put in by the Ozark Water & Power Co. near Branson and Hollister, in Taney county, Missouri. Frank Seebre and associates of Springfield, Mo., were the original promoters of the project, and organized the White River Construction Co. This company was later taken over by the Ozark Water & Power Co., headed by H. L. Doherty of New York city. The plant consists of a hollow, reinforced concrete dam, 52 feet high, 80 feet wide at the base and 4½ feet wide at its crest. Eight draft tubes convey the water to the turbines. These tubes are 84 inches in diameter. The turbines in use are the S. Morgan Smith Company type.

Only five of these tubes are in operation now; the other three will be utilized as soon as storage dams are constructed above to gather a larger head of water. These five wheels now in use are connected with five General Electric Co.'s generators of 66,000 volts. Each generator develops a maximum of 2000 horse-power.

The power from this plant is utilized in Joplin, Springfield and other Southwest Missouri points for lighting, heating, power and traction purposes. The power is taken over transmission lines to Springfield, Mo., a distance of 43 miles, and thence to Joplin, 100 miles. The transmission lines are built of copper wire strung on steel towers, the wires being held in place by vitrified insulators 24 inches high and 16 inches in diameter. The S. Morgan Smith Company of York, Pa., installed and furnished the water-wheels, draft tubes, trash racks and floodgates. The General Electric Co. of Schenectady, N. Y., furnished and installed the entire electrical equipment, including the transmission lines. The dam was constructed by the Ambursen Hydraulic Construction Co. of Boston, Mass. J. F. Maxson was the supervising engineer of the dam construction, and T. O. Kennedy the financial representative of the power company.

Surveys have been made and test pits dug for two dams above the present one. One is to be built near the Maine Club, a mile above the towns of Hollister and Branson, on the White River, and the other at the Virgin Bluff, on the James River, a tributary of the White. The dam at the Virgin Bluff will be a storage dam to conserve water during wet periods for use during low

stages of water. The dam below this, which will be built near the Maine Club, on the White River, will be a power dam. The necessary legislation for the James River dam has been passed, but the bill allowing the construction of the other is still before Congress.

The second largest water-power plant in the Ozarks was completed early last year at Mammoth Spring, Ark., in Fulton county, on the Spring River. The Spring River is formed by the outflowing water of the Mammoth Spring, the largest spring in the world. The Mammoth Spring Electric Light & Power Co. put in this plant. It is a corporation organized under the laws of Arkansas. All of the stock is owned by the estate of Napoleon Hill of Memphis, Tenn. The project was promoted and financed by his son, Frank F. Hill. The plant was constructed under the supervision of J. A. Omberg, Jr., a designing and consulting engineer of Memphis, Tenn. The plant is composed of three units or dams, which generate a maximum of 3000 horse-power. The equipment consists of Lafell horizontal water-wheels and electrical equipment furnished by the Westinghouse Company. Transmission lines from this plant tap the towns of Thayer, Koshkonong, Brandsville and West Plains in South Central Missouri. West Plains consumes the greatest amount of power, having contracted for 20,000 kilowatts per month. While the present capacity of the plant is only 3000 horse-power, additional units can be constructed that will develop some 35,000 horse-power, and as the demand increases these units will be added as needed.

Contemplated developments in the Ozarks consist of a 125-foot dam in the White River at Cotter, Ark., in Baxter county. This project is being promoted by the Dixie Power Co., composed of local and Little Rock men. The company was organized by Walker V. Powell of St. Louis, Mo. The preliminary surveys were made by Laird & Homan of St. Louis. It is estimated from preliminary figures that 50,000 horse-power can be generated at this point with a 125-foot dam. Legislation allowing the construction of this dam is now pending before Congress.

G. C. Burton of Chicago, Ill., has lately been granted franchises by the State of Arkansas allowing him to construct dams and water-power plants of various descriptions on the White, Buffalo and North Fork rivers. Preliminary surveys have been made by him on the North Fork River near the mouth of Otter Creek, three miles above the mouth of the river. The surveys were made under the supervision of Professor Gladson, head of the electrical engineering department of the University of Arkansas, and a very favorable site for a dam was located.

## Private Fire Protection

By COL. A. W. WALTON of Meridian, Miss.

City Government vs. Citizen Taxpayers is a topic that should be considered from a standpoint of justice and rights, as between a municipality and the citizens who compose the municipality.

There is no use in denying the fact that it takes much money to maintain and properly support any city government, and to supply the needed improvements that are demanded from year to year in order to keep pace with the demands of health, the convenience and prosperity of its citizenry. To supply the necessary funds for all purposes taxes the wisdom and ingenuity of mayor and council or city commissioners to their utmost ability. Budgets are prepared to show the amounts required to maintain each department during the fiscal year, and a tax levy is made against all citizens to cover the same. This levy applies to realty and personal property only.

In addition to this, the business man is required to pay a license to do business. The doctor, lawyer, dentist, the blacksmith, the carpenter or brickmason to ply their trades are also required to pay license in order to make their living in the municipality in which they are joint owners, from the fact that they are assessed to maintain same. This is all right when taxation is based on a just proportion to all. Municipally-owned utilities, such as water-works and lighting plants, built by and for the people, are the bones of greatest contention at the present moment. Officials seem to think that these utilities should be operated to pay big profits, at the expense of the consumer, whose tax money provided these utilities. Corporations and individuals are taxed to maintain and support the various departments of city government, chief among them being the fire department, which pro-

teets our homes and other buildings from destruction by fire. All citizens are taxed for this protection alike. But if some individual, company or corporation, having large interests at stake, elects to seek additional protection to his own and surrounding properties by putting in a system of private fire protection which of itself effects a great saving to the city in the amount of water consumed in the event of a fire, and for this expensive outlay, put in solely for added protection, he is double taxed for the privilege of making connection with city mains, when it is plainly the duty of the city to afford all reasonable protection to the investor, who has already been taxed for this service. Many cities have realized the gross injustice of this double tax and have abandoned the practice. Other cities, less observant of the rights of citizens and taxpayers, cling to the shopworn argument that the individual installing added facilities for protection receives the benefit of a lessened rate of insurance. This is true. It is also true that the city receives a benefit in the saving of large quantities of water in the event of fire, which is ample remuneration for the privilege accorded. The fallacious argument made by city officials that, in view of the saving in insurance to the individual, we are justified in imposing an additional tax, can only be regarded as ignorance of the sense of justice or the desire to play the bandit by holding up their helpless victims.

The writer is qualified to judge both sides of this question, having been privileged for years to occupy the positions of mayor, councilman and superintendent of public works. My theory has ever been that cities should encourage in every reasonable way the instalment of individual fire protection. Surely, the heavy taxing of

this privilege does not encourage this advancement of science in fire protection and prevention. When city officials discourage enterprise and advancement in the individual, by double taxing his efforts at advancement, might and justice have reached the "parting of the ways" and the victim of might is left to bear the burden of injustice without hope of redress.

### A "BEEHIVE" INDUSTRIAL BUILDING.

Investment of \$1,500,000 Represented in a Model Plant at Baltimore.

The opportunities for manufacturers seeking location and abundant cheap power were never better than at the present time by reason of the fact that in many cities industrial buildings have been erected which are designed to meet the requirements of manufacturers who seek floor area permitting most economical manufacturing cost, superior natural light, ideal shipping facilities and fireproof and sanitary surroundings for employees. Notable among this class of buildings is the Coca-Cola Building at Baltimore, erected two years ago and now to be enlarged at a cost, including ground, of nearly \$1,000,000. The construction of this building and its equipment illustrate the ideal isolated power

greater weight-carrying capacity. Three thousand piles, placed according to the distribution of the weight of the building, averaging 15 feet long and tapering from 15 inches in diameter at the butt to 8 inches at point, will be required, with each pile supporting a maximum load of 30 tons. The Raymond concrete piles used in this work are cast in place in a spirally reinforced steel shell dressed on a core and driven into the ground to required depth and then withdrawing the core, leaving the shell in the ground. The shell consists of separate sections, with each section as it is pulled into place overlapping the next, with the ends wrapped with yarn to make them water tight, thus forming a continuous tube into which the concrete is poured after placing vertically four five-eighths inch reinforcing rods.

Each of the first eight floors will contain 53,340 square feet, and the ninth, tenth, eleventh and twelfth floors will contain 34,670 square feet each, giving the combined buildings a total available renting space in excess of 600,000 square feet, or about 15 acres.

Ample driveways for continuous wagon traffic, 6000 square feet of shipping platforms and a siding from the Baltimore & Ohio Railroad which will accommodate a train of five cars running into the building, will be provided.

The Eastern department of the company, including all territory north and east of Richmond, will occupy



COCO-COLA BUILDING AT BALTIMORE.

plant. The company generates and sells electric current to the building's tenants, and also provides live steam used in various manufacturing purposes. The success of its eight-story fireproof industrial building at Pratt and Concord streets prompted the company to purchase all the remaining properties in the block and to erect an additional building 12 stories high and basement. The whole plant, including cost of site, will represent an investment approximating \$1,500,000. The proximity of railroad lines and steamship terminals make the location of the building an ideal one for diversified manufacturing purposes. Its erection will mean a great aid to the manufacturing and business interests of Baltimore.

The new building will be of the same general design as the original structure, which is of ferro-concrete construction originated and planned by Arthur Tufts, chief of construction for the company. It will be 12 stories, finished in pressed brick, having four passenger and ten freight elevators, four fire towers and three fireproof stairways, automatic sprinkler system throughout, fire pumps having capacity of city fire engines, and its own power and light equipment. Two boilers of 300 horsepower each, with three electrical units of 150 kilowatts, 100 kilowatts and 50 kilowatts, respectively, direct connected to Corliss engines, in addition to the present power equipment, will be installed, together with new switchboard and triplex pumps for boiler feed, etc. While contracts for machinery have not been awarded, the engineers have practically decided on the equipment.

While wooden piles were used in the foundations of the first structure, reinforced concrete piles as developed by the Raymond Concrete Pile Co., New York, are used in the foundation of the addition, on account of their

from 25,000 to 50,000 square feet of the building for office and manufacturing purposes. The balance of the floor space will be leased to high-class tenants, principally manufacturers of staple lines of merchandise. Some of the tenants occupying the building at present include the Francis Company, straw-hat manufacturer; L. Greif & Bro., clothing manufacturers; the Pompeian Company, importer and packer of olive oil; the Chocolate Products Co., manufacturer of chocolate specialties; Allan W. Fulton & Co., marine engines and automobile trucks; Turnbull, Todd & Co., hardware and machinery supplies; G. S. Briggs Company, lumber; the Lumber Exchange, and others.

An evidence of the value of an industrial building of this character, located in the business district near shipping and railroad terminals, was shown by the fact that it was filled shortly after completion. The same schedule of prices will apply to the new structure, and it is expected that it will prove even more popular. Wm. Martien & Co., Baltimore, are agents for the building.

### Wheeling Steel & Iron Co.

An increase of capital stock from \$5,000,000 to \$7,500,000 has been decided upon by the Wheeling (W. Va.) Steel & Iron Co. for the purpose of acquiring the Wheeling Sheet & Tinplate Co.'s plant at Yorkville, O. and making extensive improvements to its plants at Benwood and Wheeling. It is proposed to double the output of the Benwood steel plant, increase the output at Wheeling, install several bar mills to roll sheet bars for the Yorkville plant and increase the tinplate capacity at Yorkville.

### CONTROL DRAINAGE CANAL.

Interesting Features Possible in Florida Reclamation Work.

Vice-President J. E. Ingraham of the Florida East Coast Railway Co., writing from St. Augustine, Fla., to the MANUFACTURERS RECORD, says:

"For some years an effort has been made to secure a harbor of refuge along the Florida coast, and some two years ago a survey was ordered by the Government, after a petition had been circulated for the purpose and an appropriation, which I understood to be about \$50,000, made for that purpose, but no appropriation has ever been made for the work that I am aware of.

"The St. Lucie River is one of the outlets of that large body of land lying between Lake Okeechobee and the coast, and there is a project by the State to build the principal drainage canal from Lake Okeechobee to the south fork of the St. Lucie River. This canal is mentioned as the 'Control Canal' in the pamphlet copy of the report of the Isham Randolph survey of the Everglades of Florida, made for the State Board of Internal Improvement of the State of Florida a year ago.

"This canal is not a navigation canal. It is proposed to make it the principal drainage canal and to use the six or seven feet of headway obtained in this canal for the purpose of providing some electrical power. They think that they will have a head which will give them, under proper handling, a plant of about 5000 horsepower, which is, of course, a very great consideration, but the drainage bonds of \$6,000,000 authorized to be issued by the last Legislature have not even been printed; nothing has been done toward their sale, simply for the reason that the bond houses who are interested in such things do not consider that the bond is a good one because it does not carry the State's guarantee of payment.

"In reference to a waterway across through this canal to Lake Okeechobee, by way of the Caloosahatchee River, it would mean an enormous expense in reducing the Caloosahatchee River. At the present time Lake Okeechobee is some five feet below normal, or a depth of about 16 feet, instead of its normal depth of 21 or its storm depth of 22 to 24 feet, and being at this depth, navigation has wholly ceased on the upper Caloosahatchee River.

"In so far as communication across the State is concerned, there has been for two years a little line of steamers and naphtha boats running from Lauderdale to Fort Myers by way of the North Canal into Lake Okeechobee, crossing the lower end of Lake Okeechobee and out through the Caloosahatchee River, but the gradual lowering of the lake by the canals already cut, which have no locks which are operative in them, have reduced the level of the lake to such an extent that even some of these canals are not now deep enough for transportation, and there is no business now going out of the Caloosahatchee River.

"There has been a large fish business in Lake Okeechobee which went to Fort Myers, but the lowering of the water in the Caloosahatchee River has forced that business to Fort Lauderdale, where it is now being handled by our railroad company."

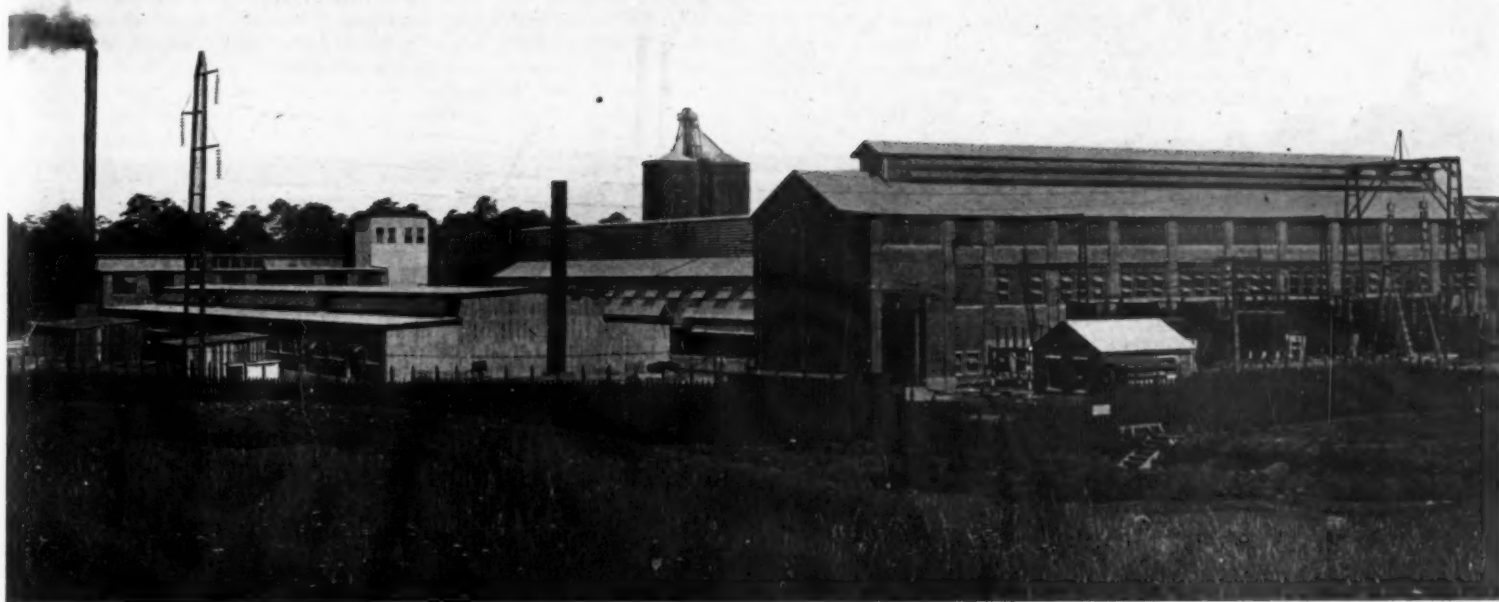
### Improvements to Cost \$1,000,000.

General improvements and several extensions to cost \$1,000,000 are proposed by the Lone Star Gas Co. of Fort Worth, Tex., now piping gas from the Henrietta fields to Fort Worth and Dallas. These betterments are to include the installation of a large gas compressor in the Henrietta fields. Capital stock has been increased from \$3,500,000 to \$4,500,000.

The Southern Audit & Traffic Co., capital \$4000, has been incorporated at Birmingham, Ala., to conduct a general auditing business and expert accounting, besides checking up and comparing traffic rates of railroads and other common carriers. J. T. Mason is president; C. E. Bond of Montgomery, vice-president; T. L. Anderson, secretary-treasurer.

Victor G. Schreck, W. V. Davis, Carl Mendel, Jacob Collins and C. P. Rossignol of Savannah, Ga., are considering plans to establish an autobus line from Savannah to White Bluff, Coffee Bluff and adjacent territory. The idea is to develop suburban regions.





PLANT OF THE ALUMINUM COMPANY OF AMERICA AT MARYVILLE, TENN.

The power-house is shown in the foreground. The potrooms extend directly west from the power-house. The warehouse and relining building are to the left, with the top of the ore bins showing at the rear of the plant. More than 500 men are employed at this point.

## Making Aluminum in East Tennessee

By L. P. MASON.

Between 25,000 and 30,000 pounds of aluminum are being produced daily at the plant of the Aluminum Company of America at Maryville, Tenn. The construction was begun June 1, 1913, and operations began on March 15, 1914. Additional buildings are planned to follow the completion of the big hydro-electric plant and dam on the Little Tennessee River, which will probably be constructed within the next three years. In connection with this project a corps of engineers has been making surveys along the Little Tennessee River for more than a year. The Maryville plant is now using 35,000 horse-power, 25,000 furnished by the East Tennessee Power Co.'s hydro-electric plant at Parksville, Tenn., and 10,000 by the Chattanooga & Tennessee River Power Co.'s plant at Hales bar, near Chattanooga.

The plant, one mile north of Maryville, is situated between the Southern Railway and Louisville & Nashville Railway tracks, both of which enter Maryville. The Aluminum Company has constructed a railroad one mile long from the Southern to the Louisville & Nashville tracks, and from this track it has extended spur tracks along each side of its warehouse, and another is extended back past the ore bins for the purpose of unloading the ore and also for the purpose of weighing every carload of material, whatever it may be, on the large scales, which have a weighing capacity of 200,000 pounds. In addition, the Southern Railway Co. has established a station opposite the plant, which is known as North Maryville.

The power-house is 200 feet in length, 60 feet in width and 40 feet from floor to roof on either side. The foundations, which include both the first and second floors, are constructed of concrete throughout, and the walls are of brick in a structural steel frame. The power-house is so constructed that it can be extended as the additional potrooms are added to the plant. There are eight transformers in the power-house and nine rotaries for again reducing the current before transmission to the potrooms and machine shops. The rotaries each weigh 16 tons and make 400 revolutions per minute. This building is equipped with a traveling crane. Practically every piece of machinery in this plant is electrical throughout and automatically oiled from the big motor-operated oil tanks near the power-house. The transmission wires for the operation of this plant are of genuine aluminum, one and one-quarter inches, and are the product of the United States Aluminum Co., Massena, N. Y. Practically every piece of machinery used in the entire plant was manufactured by the Westinghouse Company, New York. The electrical force consists of a chief electrician, assistant chief electrician and from eight to ten assistants.

The potrooms are 450 feet in length, 50 feet in width, about the same height as the other buildings mentioned in this article, and extend west from the power-house.

Each has a washroom, where employees bathe and redress after coming off of duty. There are now only two potrooms in operation. Each potroom has 72 pots. The pots, of one inch copper, are about 8 feet long, 4½ feet wide and 20 inches deep, and have a four-inch lining of carbon material. This lining reduces the size of the pot inside to a length of 7 feet 4 inches, width to 46



WATER TANKS FOR PLANT OF THE ALUMINUM COMPANY OF AMERICA OF 110,000 GALLONS CAPACITY EACH.



BOULEVARD BUILT BY THE ALUMINUM COMPANY OF AMERICA CONNECTING ITS PLANT WITH MARYVILLE.

inches and depth to 16 inches. Sixty-four electros, or carbons, as they are commonly called, are required to the pot every 24 hours. Every carbon is screwed to a copper rod, which fastens automatically to a copper arm above and is allowed to rest on the bottom of the pot. This forms the circuit, and with a continual flow of electricity from the rotaries into the potrooms and to every pot and electro the process for heating is complete, and the aluminum ore is cooked and a run is made every 24 hours. After the aluminum ore is cooked it is run into a large kettle, which is picked up by an electric traveling crane and carried to the center of the potroom and there poured into the molds. When it becomes cool enough to handle it is transferred to the warehouse. When the aluminum comes from the molds it is of pig shape and weighs from 40 to 60 pounds per pig, or an average of about 200 pounds of aluminum per pot every 24 hours. The aluminum ore has to be cooked a certain time under a certain degree of heat, and when this degree has been reached an electric light flashes at the back of the pot. This process of heating is looked after by the meter men, and is a signal to the operatives that the pot must be tapped. The operating department is carried on under the eight-hour system, or eight hours per shift. About 100 men are required to the shift, or 300 per day, for the operation of the potrooms. Two floorwalkers and three foremen are required to every shift. Almost the entire walls of every side of the potrooms are of metal sheeting automatic windows, which are kept open most of the time.

The ore bins are set on a concrete foundation about 12 feet high, and under them are extended tracks where tram cars are loaded with ore and transferred to the potrooms. The bins are of steel construction, 36 feet in diameter, about 125 feet high, and each holds 45 cars of ore, with a maximum weight of 60,000 pounds per car. Every car is unloaded by an elevator. The motor which runs this elevator is several feet above the top of the bins.

The relining building is 160 feet long and 50 feet wide. The walls on either side are 32 feet from floor to roof. The foundation is concrete, and the walls are of brick. In this building are the relining shops; the blacksmith shops; the ovens for rebaking the pots after they are relined; the 150-horse-power steam boilers which are used for the operation of the auxiliary plant, which is a few feet west and connected with this building. These boilers are also used for steam heating purposes during the winter months. This building is equipped with an electric traveling crane. The auxiliary plant, which is of 10,000 horse-power capacity, is never used except in cases of emergencies when the company is unable to get the necessary power from Parksville for electric lighting and for the machine shops, etc.

The water-works are among the best that money could build. The water comes from Taylor's Creek, across which the company has constructed a dam of concrete 150 feet long, with spillway 120 feet. The wing-wall at the west end is 30 feet, and extends six feet above the



MAIN STREET, OR PADDOCK, VIADUCT, AT FORT WORTH, TEX., BUILT AT A COST OF \$410,000.  
This structure is, with its approaches, 2457.5 feet long, 70 feet wide, and rises 80 feet above the river.

Photographed by Bryant's Studio, Fort Worth, Tex.

crest of the dam. At the east end is the pumping station. The dam is 12 feet at the base, 20 feet high from foundation, and about 10 feet above low-water mark. The water is filtered as it goes from the creek into the intake in the pumphouse. The pump building is of concrete throughout, 30 feet in width, 40 feet in length, 30 feet from floor to roof on either side, the floor being about six feet below the bottom of the creek. In this building are two centrifugal pumps, one with a capacity of 1000 gallons per minute and the other a capacity of 2000 per minute. The necessary power for these pumps is furnished by transmission wires from the plant a distance of nearly one mile. The water is forced through a 12-inch main into two tanks near the plant, each holding 110,000 gallons. One has an elevation of 125 feet above the ground and the other 75 feet. The higher one is to be used in case of fire, having a pressure of 140 pounds per square inch. Water from the other tank is for general purposes. The water for drinking and other domestic purposes is supplied from a well of fine freestone water, over which there is a large tank with an elevation of 60 feet from which a main underground is connected that carries the water separate and apart from the creek water to dwellings of the employees and to other parts of the plant where it is needed. The plant has excellent sewer facilities.

The warehouse is 500 feet long, 110 feet wide, and has a floor space of 55,000 square feet. The walls are of brick, with concrete foundation. The machine shops, the general offices and general supply house are in this building. The warehouse parallels the potrooms, and is connected with them by platforms and tramways over which the aluminum is transferred.

The Aluminum Company of America has shown its confidence in the location of its plant by building a boulevard from the plant to Maryville. This road is among the best in the State, being constructed of marble stone, spread in layers of ones, twos, threes and fours and then rolled until firm and compact. The macadam is 12 inches in center and slopes down to 5 inches on the border. The roadbed was so graded before the stone was spread as to give the road a crown of 12 inches in center. The road was graded 30 feet in width, with a roadbed of macadam 24 feet, three feet being allowed on either side for the gutter line. After the road had been properly rolled and compacted, a thick coat of oil was spread and no traffic was allowed until the entire roadbed had been thoroughly settled. The boulevard is 5000 feet in length, and connects with Washburn avenue, which leads by the Southern depot into the business part of Maryville. This road cost the Aluminum Company approximately \$25,000.

The Aluminum Company of America owns about 800 acres of land around the plant. In securing this land it had to buy some of the best farm land in East Tennessee at high prices. On this body of land are some of the most fashionable country homes to be found anywhere. All that were not up to date were overhauled and rebuilt. Many fine tenant-houses have been built here. The farm is cut up in subdivisions by wire fences, and the whole tract is rented to two individuals for cash. These parties subrent it. Every home is supplied with water from fine springs and wells, besides hydrants through which water is supplied from the water-works for general purposes. Each residence is electric-lighted and equipped with a telephone.

Mr. A. D. Sanderson, engineer and general manager of the construction of this plant, pushed it to an early completion. The construction involved the expenditure of millions as well as the solving of many difficult problems. Sanderson is an economist in the highest sense

of the word. His principal assistants were R. E. Mason and G. M. Bassell.

### FORT WORTH'S PADDOCK VIADUCT.

#### Art and Utility Combined in the Structure Nearly Half a Mile Long.

The great Main street, or Paddock viaduct, carrying Main street of Fort Worth proper across the Trinity River to the industrial city of North Fort Worth, was formally opened for public use on July 3. The viaduct is a triumph of artistic engineering, for the utmost requirements of the factors of safety have been met, and yet those who have seen this bridge are united in favorable comment on the artistic beauty of the structure.

Three problems presented themselves for the solution of the designers of the bridge, Brenneke & Fay of St. Louis, Mo. From the city proper to the Trinity River bottom, that lies between the city south of the river and that newer part of the city north of the river, including in the latter the packing-house and stockyards district, there is a descent of approximately 100 feet. Therefore one problem was to design a bridge that should meet this difficulty and yet have an easy grade, 4 per cent. being fixed as the absolute maximum for the grade. That maximum was not quite reached. Trinity River is subject to floods, sudden and swift in rise. Another problem was to build a bridge that would have every possible factor of safety as suggested by experience with past floods. Yet another problem was to have the viaduct of sufficient strength and size to amply accommodate the present traffic and provide for future increases of this nature.

When the arch and girder-span type of bridge was selected as the design it was found one of the arches, the main arch carrying the roadway over the river, would have to be not less than 225 feet wide, and there would have to be another arch with an abutment 40 feet higher than the other, by reason of the configuration of the banks of the river.

All of those problems were met and solved, and now, at a cost of about \$410,000, the county of Tarrant and the city of Fort Worth have one of the greatest structures of the kind in the United States.

Including approaches, 572.5 feet, the total length of the bridge is 2457.5 feet, for certain fills were made in city streets, or grades cut, so the 4 per cent. grade maximum of the bridge should not be exceeded, and they all come under the denomination of bridge approaches. The length of the bridge proper is 1885 feet, 80 or more feet above the river level, and with a highway 60 feet wide, 54 feet being given to the roadway, with two eight-foot sidewalks on either side of the roadway. The roadway accommodates double street-car tracks, and yet there is available a driveway on either side of the tracks of 19 feet. The bridge is so paved there is no hindrance to crossing from one side of the roadway to the other by reason of the car tracks, though, except where the necessity is imperative, the rule of the road, "keep to the right," will be most rigidly enforced. But the tracks are laid flush with the brick paving, so there is no possible trouble on that score to be anticipated.

The arch spans of the bridge are two of 175 feet each, one of 150 feet and one of 225 feet, the latter being 80 feet high. There are three girder spans of 62½ feet each, and seven of 50 feet each. Both at the north and at the south ends of the viaduct there are fills held in place by strong retaining walls and actually a part of the bridge itself.

Work was begun in December, 1912, and completed in March, 1914, except the approach work and the roadway paving, the contract time requirement, completion in 365 working days, being met. The contractors were the Hannan-Hickey Bros. Construction Co. of St. Louis and Fort Worth, with P. E. Hickey, resident manager.

Wm. Holden, connected with the Brenneke & Fay Company of St. Louis, was in the designing-room when the plans were drawn, and was sent here to superintend the construction of the bridge, and that work he did perfectly. Mr. Holden gives the following statements of the quantity of materials used in the bridge: Cubic yards of concrete, 26,824; reinforcing steel bars, 1,379,000 pounds; structural steel, 1,537,300 pounds, and steel castings, 205,450 pounds. No account is taken in this of a number of minor things, such as brick for paving the viaduct, steel rails and ties for the street-car tracks, wires and lamps for night lighting, etc., the chief items of material being recorded above.

A novelty in the construction of the main river, or longest arch, is the use of three hinged structural steel arches encased in concrete, the arches thus acting as a reinforcement for the concrete. The arch and the bluff arch, with its legs of unequal length, are each novel features in the building of this bridge, unique in their way. The south arch, or river bluff arch, rests on a base that is 40 feet lower on the river side than on the bank side of the arch.

Designed to carry the heaviest kind of interurban car traffic, the viaduct is exceptionally strong; if anything, being in excess of requirements. It would be practically impossible, with such traffic as will naturally use it, to overload the bridge in a manner to endanger its stability. Its foundations are down to bedrock, and well anchored to the rock.

Tarrant county, of which Fort Worth is the county-seat, voted bond issues of \$1,000,000 for road building and \$600,000 for bridge building. All of the former radiate from the city, and all of the bridges are within the city limits. As Fort Worth has six times the voting strength of the rest of the county, and pays fully 85 per cent. of all of the taxes, no serious objection was made to the bond issue. After it was voted on, the action of the County Commissioners' Court, which under the Texas laws has absolute control of expenditures for road work and bridge building, the Fort Worth Chamber of Commerce was invited to join in the selection of an advisory committee to act in co-operation with the County Commissioners in selecting the design for the bridge, in supervising the letting of the contract for its construction and in all other matters in which such a committee could properly act. That committee has most cordially worked with the County Commissioners, through several changes in the latter body, and was of great assistance to the county officials in securing the eminently satisfactory result that has been achieved.

The bridge opening celebration was a most elaborate affair of civic processions, christening ceremony, addresses of dedication and congratulation and pyrotechnic display at night, the ceremonies beginning at 6 o'clock P. M. Street cars of the Northern Texas Traction Co., the company owning the Fort Worth street-car franchise, have been using the bridge since June 15. Other traffic has passed over it also, though vehicular traffic was limited by the fact that the bridge approaches were not yet in perfect condition for use. As there was a heavy fill at the south end of the bridge, it will be months before that part of the work will be permanently fixed, the determination being to give the "fills" abundant time to settle before the permanent paving is done. That is



to be of brick, connecting with brick-paved streets and the brick surfacing of the viaduct.

With the balance of the bridge bond issue and some of the county's regular road and bridge funds three other bridges have been built, one of them being over 1000 feet long, carrying West 7th street over the Clear Fork of the Trinity River. That bridge is 1041 feet long, with a width of 56 feet. The other two bridges are each 450 feet long, with width of 40 feet, spanning the Trinity River on the east side of Fort Worth.

The formation of the banks at those points was such that fills carried the streets directly to the bridges.

## SIX MONTHS OF SOUTHERN BUILDING.

### Details of Construction Plans in Many Leading Cities.

The value of Southern and Southwestern building operations for the first six months of the present year indicates a slight decrease as compared with the corresponding period of last year. This is probably due in a large measure to a general industrial depression, and is more notable in the larger cities. In some localities, however, substantial increases have been made. The following figures as compiled from reports from representative cities present a summary of Southern and Southwestern building operations from January 1 to June 30, inclusive.

A notable record was made, however, at Baltimore, where the estimated cost of new improvements for which permits were issued from January 1 to June 30, inclusive, is \$7,091,626; for alterations and repairs, \$450,000, and for additions, \$508,500. In January it is estimated \$60,000 was expended for additions, \$55,000 for alterations, \$478,790 for new buildings; February, \$48,000 for additions, \$50,000 for alterations, \$1,483,855 for new buildings; March, \$64,000 for additions, \$86,000 for alterations, \$679,767 for new buildings; April, \$75,000 for additions, \$90,000 for alterations, \$1,015,900 for new buildings; May, \$106,000 for additions, \$85,000 for alterations, \$1,186,904 for new buildings; June, \$155,500 for additions, \$84,000 for alterations, \$2,246,410 for new buildings.

The cost of construction for which permits were issued in Richmond, Va., for new improvements from January 1 to June 30, inclusive, is estimated at \$1,895,570, and for alterations and repairs at \$248,083, making a total of \$2,143,653. New construction was as follows: Brick dwellings, 203, \$1,064,766; frame dwellings, 72, \$98,144; warehouses and manufactories, 19, \$228,866; private stables, 11, \$11,253; private garages, 47, \$25,673; brick stores, 54, \$227,915; frame sheds, 27, \$9640; public garages, 1, \$12,699; apartment-houses, 6, \$174,000; schools, 1, \$20,000; theaters, 1, \$15,000; rest stations, \$27,614. During June 35 permits were issued for new construction estimated to cost \$132,795, and 60 permits for alterations and repairs to cost \$39,774. These figures show an increase of \$25,452 over June, 1913, for new work and a decrease of \$5691 for alterations and repairs.

Building permits issued in Norfolk, Va., during the fiscal year July 1, 1913, to June 30, 1914, inclusive, represent a cost of construction of \$2,184,077. The aggregate number of permits was 703. In January of this year 51 permits were issued, representing a cost of construction of \$119,400; February, 47 permits, \$112,338; March, 71 permits, \$363,040; April, 93 permits, \$341,580; May, 51 permits, \$158,500; June, 64 permits, \$209,572. From January 1 to June 30, inclusive, a total of 377 permits was issued, representing a cost of construction of \$1,304,430.

The Commissioner of Revenue at Lynchburg, Va., estimates the value of building operations in that city for the six months ended June 30 at \$300,000. Of this total, about \$160,000 was expended for dwellings, numbering approximately 100, the majority of which are of frame construction. Business buildings are distributed as follows: Brick apartment-houses, \$15,000; frame church, \$10,000; brick addition to tobacco warehouse, \$10,000; two brick office buildings, \$25,000; two brick moving-picture theaters, \$45,000, and two mercantile buildings, \$35,000.

It is said that no other city of North Carolina is making better constructive progress in building operations than High Point. More than 45 business buildings are being erected, and it is expected that the total of operations during the year will exceed \$1,000,000. Figures for other North Carolina cities are not available.

While the estimated cost of construction for which

permits were issued in Savannah, Ga., for the six months ended June 30 shows a decrease of \$52,840 as compared with the corresponding period last year, indications are that before January 1, 1915, the year will have proven one of the best in the history of the city. There is still a number of important buildings being planned, and it is thought that last year's record will be exceeded both in the number and value of new buildings. A total of 363 permits was issued from January 1 to June 30, inclusive, representing a cost of construction of \$961,530. In January 60 permits were issued, representing a cost of construction of \$314,875; February, 43 permits, \$100,950; March, 67 permits, \$194,400; April, 47 permits, \$54,945; May, 71 permits, \$142,300; June, 75 permits, \$154,000.

In Augusta, Ga., 38 permits were issued during June for new construction to cost \$71,975, and 68 permits for alterations and repairs to cost \$5729. The cost of construction for which permits were issued in January was estimated at \$95,545, the number of permits being 131. Figures are not available for the intervening months, but the value of operations for the six months of the year will probably approximate \$1,500,000, as work has begun or about to begin on a number of important structures.

For the first five months of the present year permits were issued in Atlanta, Ga., for construction estimated to cost \$2,589,143. A report as to the extent and value of operations during June has not reached us, but the total for the first six months of the year will probably exceed \$3,000,000.

Figures for Tampa, Fla., show that a total of 788 permits were issued from January 1 to June 30, inclusive, representing a cost of construction of \$846,180. As compared with the corresponding period last year, there was an increase of 89 in the number of permits and \$106,603 in the cost of construction. A total of 121 permits was issued in June of this year, representing a cost of construction of \$213,050, as compared with 128 permits in June, 1913, representing a cost of construction of \$139,929. In January of this year 135 permits were issued, representing a cost of construction of \$181,230; February, 129 permits, \$109,820; March, 132 permits, \$114,855; April, 152 permits, \$125,280; May, 119 permits, \$101,945. It is estimated that operations in West Tampa and suburbs not included in the corporate limits of the city will approximate \$1,200,000 for the first six months of the year.

The value of buildings being erected at Fort Pierce, Fla., is estimated at \$503,000, including high school, Catholic school for boys, two school buildings for colored pupils, building for Bank of Fort Pierce, Presbyterian church building, business buildings and about 200 residences.

From January 1 to June 30, inclusive, it is estimated that 180 dwellings have been erected in Arcadia, Fla., at an average cost of \$1500, making a total of \$270,000. The amount expended on business buildings and general improvements is estimated at \$500,000. In Fort Pierce, Fla., it is estimated that \$500,000 has been expended in building operations during the same period, while the structures to be erected during the next six months will involve another \$500,000. Figures for the six-month period for Jacksonville are not available, but the value of operations will doubtless largely exceed \$1,000,000.

Operations in Memphis, Tenn., for the first five months of the year were valued at \$1,731,825, as compared with \$1,796,381 for the corresponding period last year. The total for six months of the present year will probably reach \$2,000,000.

More than 50 permits were issued in Knoxville during June, representing a cost of construction of \$58,281. As compared with June, 1913, these figures show an increase of \$23,159. The value of operations for the first six months of the year will probably reach \$300,000.

A total of 1138 permits was issued in Chattanooga during the first six months of the present year, representing a cost of construction of \$733,440. The number of permits issued and the estimated cost of construction by months are as follows: January, 156 permits, \$55,170; February, 178 permits, \$108,925; March, 183 permits, \$111,410; April, 207 permits, \$219,490; May, 224 permits, \$78,400; June, 190 permits, \$60,045.

The value of new buildings, alterations and repairs erected in Morristown, Tenn., for the first six months of the year is estimated at \$200,000. A large proportion of the structures is in the business section of the town, but many residences and additions are included in the total.

In Louisville the cost of construction for which per-

mits were issued from January 1 to June 1 was estimated at \$2,029,935, an increase of about \$90,000, as compared with the corresponding period last year. The value of operations during June will bring the total for six months of the year to about \$2,500,000.

The value of building construction in New Orleans, La., for the five months of this year ended May 31 was estimated at \$1,062,391, as against \$1,848,809 for the corresponding period last year. For the six months of the year the total will approximate \$1,250,000.

Permits were issued in Shreveport, La., during the first five months of the year for construction to cost \$689,473, as compared with \$586,916 for the corresponding period last year. For the full six-month period of the present year the value will approximate \$700,000.

In Lake Charles, La., the value of operations from January 1 to June 30, inclusive, is estimated at \$240,000, an increase over the corresponding period last year.

Permits were issued in St. Louis, Mo., for the first five months of the present year for construction to cost \$6,443,254, as against \$7,170,162 for the corresponding period last year. With the total for June added to these figures the value will probably reach \$7,500,000.

In Kansas City, Mo., the cost of construction for which permits were issued during the first five months of the year was estimated at \$5,369,175, as compared with \$4,364,070. Estimating the total for June on the basis of these figures the total for the first six months of the year will exceed \$6,000,000.

For the first five months of the year permits were issued in Little Rock, Ark., for construction to cost \$480,934, as against \$615,309 for the corresponding period last year. The total for the first six months will approximate \$600,000.

Permits were issued in Tulsa, Okla., during June for construction estimated to cost \$106,000, the greater part of the new work being for residences to cost from \$1000 to \$3000 each. The valuation for six months will probably reach \$1,000,000.

Figures compiled by the Texas Business Men's Association show that permits were issued in the nine principal cities of Texas during the first six months of the year for construction estimated to cost \$12,887,449, as against \$13,951,107 for the corresponding period last year. The decrease is attributed to incessant rains, which materially interfered with the lumber industry and caused building activity to be minimized throughout the State. In the value of operations Dallas leads with \$3,793,448, while Houston is second with \$2,067,574. The value of construction in the other cities referred to is as follows: San Antonio, \$1,673,795; Waco, \$1,478,904; Fort Worth, \$1,225,413; El Paso, \$933,247; Galveston, \$876,806; Austin, \$468,005; Beaumont, \$370,257. During June the same cities authorized permits representing a cost of construction of \$1,813,038, as compared with \$2,810,469 for the corresponding month last year. Dallas leads with \$588,945 and Houston is second with \$273,379. The other cities and amounts authorized are as follows: Austin, \$246,746; Galveston, \$184,006; Fort Worth, \$180,175; El Paso, \$146,375; Waco, \$92,143; Beaumont, \$75,724; San Antonio, \$25,450. The amount authorized in Austin during the month is more than three times as much as was authorized in any other month during the year, and is about \$25,000 in excess of the amount authorized during the first five months of the year.

Figures are not available covering building operations in Huntington, W. Va., for the period of six months, but for June a total of 76 permits was issued, representing a cost of construction of \$78,814. As compared with June, 1913, these figures show a decrease of 17 in the number of permits issued and \$69,469 in the cost of construction. In Wheeling, W. Va., a total of 72 permits was issued during June, representing a cost of construction of \$302,780. This was one of the best months Wheeling has ever had in building construction. Four permits were issued for new brick buildings to cost \$251,400, while 37 permits were issued for alterations and repairs to brick structures to cost \$26,110. Permits for nine new frame structures were issued, involving an expenditure of \$20,460, and 22 permits were issued for alterations and repairs to frame structures, to cost \$4,810.

The value of construction in the District of Columbia for which permits were issued from January 1 to June 30, inclusive, is estimated at \$5,728,612. For June the cost of construction is estimated at \$942,325. Of this total, brick predominated, with a value of \$325,450.

### This Year's Cotton Acreage.

The crop reporting board of the bureau of crop estimates of the National Department of Agriculture estimates, from the reports of the correspondents and agents of the bureau, that the area of cotton in cultivation this year (1914) in the United States is about 36,960,000 acres, as compared with 37,458,000 acres, the revised estimate of acreage in cultivation a year ago, being a decrease of 498,000 acres, or 1.3 per cent. The condition of the growing crop on June 25 was 79.6 per cent. of a normal condition, as compared with 74.3 on May 25, 1914, 81.8 on June 25, 1913, and 80.7, the average condition for the past 10 years on June 25. Details of acreage by States follow:

States.	Area under cultivation a year ago. (Revised estimate.)	Area, 1914. Preliminary estimate. Per cent. compared with 1913.	Acres.
Virginia.....	48,000	95	46,000
North Carolina.....	1,589,000	100	1,589,000
South Carolina.....	2,798,000	101	2,826,000
Georgia.....	5,345,000	101	5,398,000
Florida.....	192,000	101	194,000
Alabama.....	3,798,000	103	3,912,000
Mississippi.....	3,117,000	101	3,148,000
Louisiana.....	1,263,000	110	1,389,000
Texas.....	12,686,000	95	12,052,000
Arkansas.....	2,527,000	100	2,527,000
Tennessee.....	866,000	100	866,000
Missouri.....	113,000	110	124,000
Oklahoma.....	3,102,000	92	2,854,000
California.....	14,000	250	35,000
United States.....	37,458,000	98.7	36,960,000

### Wants Agencies for Europe.

Heinrich Bade, Semperhaus B, Spitalerstrasse, Hamburg, Germany, writes to the MANUFACTURERS RECORD as follows:

"I have interest to find an A1 factory making wire nails, as I know that the prices are cheaper in your country than in Germany. I am established in Hamburg as export agent since 12 years, and R. E. Dietz Company, New York, is represented through me about four years. I have the agency for Robert Griffin Company, Jersey City, and Hobbs Wallpaper Co., Hoboken, N. J., for all Europe. These firms can give information about me. We handle our business with Hamburg shipping houses mostly 30 days cash, and as I am daily in connection with them I never had a loss. If your friends insist cash against documents I also can arrange this, which really is not necessary, as you can rely on me to look after the interests of manufacturers I represent."

James H. Jenkins of Stamford, Conn., has been elected president of the Merchants & Miners' Transportation Co., with headquarters at Baltimore, and Joseph C. Whitney, formerly president, has been made traffic manager there. It must be noted that the new president is not related to Michael Jenkins of Baltimore, who is chairman of the board of directors of the company, and who was president of it until 1909, when he declined to continue in that position and Mr. Whitney was elected.

In celebration of its second anniversary, the Jeffersonian of Towson, the seat of Baltimore county, Maryland, published last week a splendidly illustrated issue of 52 pages, with its usual news features supplemented with a mass of interesting historical and industrial matter, a credit to the publishers.

The tentative program of the annual convention of the National Commissary Managers' Association at Louisville, Ky., August 18-20 looks to a thorough discussion of the practical problems met every day by members of the organization.

Superior Manufacturing Co., Bessemer, Ala., is about to begin manufacturing in its new plant, heretofore described. It has a daily output of 25 tons of cast-iron soil pipe.

American enterprise has an opportunity to manufacture loggerhead sponge and fish into fertilizer, suggests Consul W. F. Doty of Nassau, New Providence.

## GOOD ROADS AND STREETS

### Burnt and Agglomerated Clay in Road Construction

By F. LOUIS GRAMMER, E. M.

This paper is not concerned with grades, curves, arching, width or routes, or even with modes of construction of highways. There are many qualified to speak with authority on these topics.

We feel the subject is too important to be considered in its value to pleasure motorists, though I fear the recent impetus in road betterment had its origin with "butterflies rather than ants."

It is with the materials for suitable roads we are concerned.

The customary means of making soft places hard or smooth are, in swamps, corduroy logs, and, elsewhere, rock, brick, oyster shells, slag, tan, concrete and sand-clay. This last material for roads is increasingly becoming more popular, for it is cheap, of wide application, and I am informed bears up better under suction of a passing motor than our heretofore exemplars of the superlative in road construction, viz., macadam and Telford.

We will concede at once that where cost and conditions permit the brick roads, such as are to be found in many mile stretches in Ohio and Florida, or the concrete road, the macadam and Telford and the sand-lime, are superior to the burnt-clay road.

When population, wealth, traffic and local supplies of sand, brick and crushed stone permit these types of construction, they should be followed.

There are, however, many sections where the haulage of adequate brick supply would be prohibitive, and crushed rock in the road is cheap at \$1.25 per ton throughout many counties. Sand is often very expensive. Because we cannot hear Caruso is no reason why we should shut our ears to all song. The "best should not be an enemy to the good."

We believe the burnt-clay road is worthy of further trial in road construction. This type of construction was suggested by the sand-clay road, which in its established position we are willing to concede is of superior merit.

In a sand-clay road we must think of the sand taking the part of a solid, or disconnected "aggregate," as in concrete construction. These aggregates or piled solids bear the weight of the passing vehicle or animal. They are held together by the particles of clay intermixed. This clay we may think of as a mortar, or cement, or matrix, as in cement construction. It is in the matrix the tensile strength lies.

We all know how many intelligent critics prefer the shale road to the macadam. There is a spring in shale. Shale is but compressed clay. So long as there are no rains a clay road leaves little to be desired. It is much easier on animals and people.

This proviso, however, is a very important one. For, whereas clay roads in dry weather are far superior to sand roads: in wet weather and conditions the reverse holds.

Indeed, outside of a mountain trail over boulders, it is in wet clay roads we find our chief restriction to traffic and communication.

On the Caminha Real between Mexico and Peru, in the State of Oaxaca, there are sections where, in order to avoid sinking up to its belly, the burro encroaches on the grass at the side until the trail (called a road) is over a hundred feet wide. In the interior of Brazil I noticed the so-called highways through clay belts give evidence of similar efforts to find a web or aggregate to prevent sinking in the mire.

The give in dry shale and clay has its origin probably in the combined water, and this is certainly true of plasticity. The manufacture of pottery and brick was one of the earliest known arts of man. The ethnologist puts the potter very shortly after the weapon maker in the development of man. The potter learnt that, while wet raw clay was plastic, sticky, soggy and of use in molding, it was firm and gritty after roasting so as to expel combined or chemical water. These protean manifestations of materials are not uncommon in chemistry. The soft lampblack and the diamond have their counterpart in clay and the sapphire.

Burnt clay is brick, and its plasticity is gone. If the heat is at a higher range of temperature, the brick or nodule may serve as a stone. All clays do not make equally strong brick, but all wet brick is less sticky than any wet, raw clay.

It is thus seen that burnt clay can be used as a substitute for sand and agglomerated clay as a substitute for rock.

The complacency of discovery was soon destroyed, for the writer ascertains that the office of public roads of the National Agricultural department some years ago issued a bulletin on burnt-clay roads. Their experiments were with the very sticky carboniferous clays of Mississippi, known locally as "Black Gumbo." Wood, scrub and underbrush were locally cheap, and they were piled across the road and the clay piled on top. A match started the fire on the windward side, and the roasting was aided by the carbon in the clay. This burnt product made, when mixed with raw clay, a very acceptable product.

The cost was about \$2200 per mile. The authorities recommend that there be put on top a dressing of oil or tarvia to prevent excess dust. For brick, being softer than road metal usually used in macadam construction, makes more dust.

There are, however, woodless belts which restrict the extension of this method of road construction, and so I propose to attain the same end by portable roasters and agglomeraters. These devices permit the use of pulverized fuel, such as coke breeze and coal and also oil. In many localities such fuels are cheap. There are many driers, the most pre-eminent being the Büttner, of foreign invention, and the Ruggles-Cole, of American origin. These attain dehydration at from 2 to 20 cents per ton, depending on whether ground is dry or moist and as to whether the combined water is low or high, also on locality and local cost of fuel.

There are several agglomeraters—this is an application I borrow from the metallurgy of iron—such as the Dwight-Lloyd, the Greenawalt and the nodulizers. These all are offsprings of cement cylinder roasters and solid fuel combustion. The costs range from 25 to 60 cents per ton, depending on conditions enumerated above, to which one should add royalty and output. This rapidly-growing industry of agglomeration is extending into copper, lead, iron and cement and other ores. It may be useful here.

It is easily seen that if the devices are portable the clay road is roasted as work proceeds, and the only haulage is the 6 per cent. or less fuel demanded. The costs compared to stone are from one-fifth to one-third. The machine can be moved from one section of the country to another. This method of roasting is less extravagant in the utilization of heat than wood-pile roasting. In these days of enlightenment as to conservation one discards the use of wood for fuel in road construction as being wasteful where large operations obtain.

It is but just to add that a very prominent road authority has so much greater faith in sand-clay roads that he does not lend his co-operation to extension of burnt-clay construction. However, his experience is limited to wood burning, and he has not tried sintering and nodulizing devices. On the other hand, practical men of wide experience deem the heretofore trials inadequate in that no regeneration occurred and the tests were few.

We also think that the dried clay—say, at 400 degrees Fahrenheit, without sintering or agglomeration—is worthy of a trial as a cheap substitute for sand, and that sintered clay can be used as stone in concrete roads, and this has not to our knowledge ever been tried. It will extend cement uses.

We have not enumerated all the means of burning clay with coal. There are possibilities in overturned semi-circular pipe with forced draft or suction.

A correspondent advises us that agglomerated clay has been used in the Southwest by railroads for ballast. The vast clay or adobe stretches offer in some counties no suitable rock.

It may not be irrelevant to add that close soils may be lightened by burning clay, and many marshes may be removed by making French drains of agglomerated clay.

Considering how clay shades into slate, shale, fire clay, loam, marl and cement rock, it is obvious that the conditions making for success in East Tennessee or Charlottesville, Va., for instance, need not be the same as those found best in Mississippi or Texas.

In a movement of such stupendous import and wide



application we feel this subject deserves some backing and testing as to whether sandy roads can be benefited by agglomeration. I have no data at hand.

Leesburg, Va.

### WEEK'S SOUTHERN RECORD.

#### Details of Progress in Improvements of Highways in City and Country.

Further details of road and street undertakings and bond issues mentioned below are given under the headings Construction Department and New Securities, published elsewhere in this issue.

The MANUFACTURERS RECORD invites from its readers information about road and street work projected or under way, photographs of good roads and discussions of matters pertaining to the betterment of the highways of the South.

#### Bonds Voted.

Bastrop, Tex.—Bastrop county voted \$50,000 bonds to complete system of road, etc.

Floresville, Tex.—Road District No. 1 of Wilson county voted \$60,000 bonds to construct roads.

Jacksonville, Fla.—Duval county voted \$1,000,000 bonds, of which \$500,000 is to be for roads and \$250,000 for bridges.

Poteau, Okla.—Poteau and Howe townships of LeFlore county voted \$21,000 and \$16,000 bonds, respectively, for road construction.

Williamson, W. Va.—City voted \$150,000 bonds for paving, etc.

#### Bonds to Be Voted.

Lexington, Tenn.—Henderson county votes in August on \$150,000 bonds to construct roads.

Ripley, Tenn.—City votes July 14 on \$15,000 bonds; \$10,000 to be expended for sidewalks and \$5,000 for streets.

#### Contracts Awarded.

Houston, Tex.—Harris county awarded \$23,508 contracts for road improvements.

Houston, Tex.—City awarded \$3750 paving contract.

Mobile, Ala.—City awarded \$34,844 contract for asphalt paving and \$9008.75 contract to improve Spring Hill avenue.

Raleigh, N. C.—City awarded \$8847.50 contract to place about 10,000 linear feet concrete curb and gutter combined.

San Antonio, Tex.—City awarded \$17,000 contract to pave 12 miles with tarvia.

Webster Groves, Mo.—City awarded \$5000 contract to improve street.

#### Contracts to Be Awarded.

Carlisle, Ky.—Nicholas county has \$10,000 available to construct macadam road.

Durham, N. C.—City receives bids until July 16 for 13,500 cubic yards excavation, 6330 linear feet concrete curb and gutter, etc.

Franklin, N. C.—Franklin township, Macon county, receives bids on and after July 10 to grade about 10 miles public highway and construct 8000 square yards bituminous macadam paving, etc.

Hayneville, Ala.—Lowndes county receives bids until July 13 to gravel road; expenditure \$6542.26.

Kaufman, Tex.—City receives bids until July 10 for 7550 square yards pavement and 2000 linear feet combined curb and gutter.

Seale, Ala.—Russell county receives bids until August 3 for grading, draining and sand-claying about 9 miles of road.

Wharton, Tex.—Wharton County Road District No. 1 receives bids until July 14 to construct 660 miles hard-surface roads.

### Automobile Mountain Service.

Bat Cave P. O., N. C., July 3.

Editor Manufacturers Record:

The great piece of road work connecting up the Charlotte-Asheville highway, which finishes what is to be one of the most picturesque roads in the country, is nearing completion. Arrangements are being made by the railroads and a joint organization of hotels and farmers to put on a line of automobiles in advance of the trolley lines which will finally be built, utilizing the splendid water-powers of Big Broad and other streams that are now wasting their power over the great falls.

There is to be a contest between the manufacturers

of automobiles as to what make of machines will be selected. A tryout will be made early in July. The machines which will be put on will be a five-passenger and a seven-passenger roadsters, a larger machine that will be suitable to meet railroad passenger trains, a machine that can carry 10 to 20 passengers over a 5 per cent. grade, and truck machines suitable for carrying Luggage and freight from the cities, and on return for carrying vegetables and fruits from the valley into the cities. This is an opportunity for the manufacturers to have their machines tried out before the public in a way that will be greatly to their advantage, not only in selling to this combination, but to the public generally.

JOHN T. PATRICK.

### Austin-San Antonio Post Road.

The Austin-San Antonio Post Road extends from Austin to San Antonio, Tex., a distance of 71 miles. For improving this road the United States Government has allotted \$76,625 and the several counties have placed on deposit in their treasuries \$153,250. The counties agree to construct the improvement or cause it to be constructed in accordance with plans approved by this office and under the supervision of this office. Surveys for preparing plans are now in progress in Comal county.

### For 60 Miles of Roads.

Proposals for about 60 miles of hard-surface roads will be received until July 14 by P. G. Brooks, Wharton county clerk, Wharton, Tex. This work is to include grading, outfall drainage ditches and placing of surfacing material in Road District No. 1.

### Banna Mill Enlargement.

Construction is progressing on the Banna Manufacturing Co.'s recently-announced enlargement at Goldville, S. C. About \$10,000 is being invested for the 144x25-foot additional brick building, with 10 operative cottages, and about \$30,000 for 4006 spindles, 96 looms, 5 cards and other preparatory machinery. The new floor space will be about 5000 square feet. Plans are being furnished by the Shand Engineering Co. of Columbia, S. C. The Banna mill is now operating 10,128 spindles, 256 looms, etc., employing 125 operatives.

### The Cotton Movement.

In the 10 months of the present season the amount of cotton brought into sight, according to the report of Col. Henry G. Hester, secretary of the New Orleans Cotton Exchange, was 14,304,729 bales, an increase over the same period last season of 706,818 bales. The exports were 8,731,485 bales, an increase of 410,702 bales. The takings were, by Northern spinners, 2,472,186 bales, a decrease of 37,000 bales; by Southern spinners, 2,880,434 bales, an increase of 205,799 bales.

### To Develop 2000 Horse-Power.

At an estimated cost of \$500,000, the Canadian Power & Light Co. proposes the construction of its hydro-electric plant, 2000 horse-power to be developed. The water-power site is on North Canadian River, seven miles west of Okemah, Okla., W. H. Dill of that city being the company's managing official. This company was organized some time ago, but has not as yet awarded any contracts.

Wyandotte Cotton Mills Co., Kansas City, has been organized and is a reorganization of the Kansas City Cotton Mills Co. It is capitalized at \$125,000, and has 10,680 spindles, 236 narrow looms, 48 cards, etc.

It is reported that the French Broad Manufacturing Co., Asheville, N. C., will install 5000 spindles to spin the yarns for its 84 looms, weaving satin, etc.

Deep River Mills, Randleman, N. C., has not made plans for rebuilding weaving department recently burned.

Manchester (Ga.) Cotton Mill will, it is reported, add 150 looms.

## RAILROADS

[A complete record of all new railroad building in the South will be found in the Construction Department.]

### METROPOLIS BRIDGE AWARDED.

#### Construction Starts Immediately on Important Railroad Connecting Link.

After several years of planning and arranging preliminaries, besides obtaining requisite legislation from Congress, the first contract for the proposed large railroad bridge over the Ohio River at Metropolis, Ill., has at last been awarded, the successful bidder being the Union Bridge & Construction Co., contracting engineer, 902-5 Sharp Building, Kansas City, Mo., and construction is to begin immediately. This contract, which is worth about \$1,100,000, covers the building of seven pneumatic piers, but the entire structure will cost when completed about \$3,500,000.

Including the approaches, the bridge will be 5650 feet long, or considerably more than a mile. It will be double-tracked, and it will be built by the Paducah & Illinois Railway Co., a subsidiary of the Chicago, Burlington & Quincy Railway, and the Nashville, Chattanooga & St. Louis Railway. A 12-mile line of railroad now being surveyed will lead from the southern end of the bridge to Paducah, Ky., where connection will be made with the Nashville, Chattanooga & St. Louis Railway. The latter is owned by the Louisville & Nashville Railroad, so that the Louisville & Nashville and the Burlington systems are thus united in the important enterprise which will form a valuable connection between the Hill roads and the Gulf of Mexico ports. Furthermore, as the Atlantic Coast Line controls the Louisville & Nashville, there are three great systems interested. Connection with the Burlington is at Metropolis.

The Ohio bridge will be heavy and exceedingly substantial. The bases of the pneumatic piers are quite large, one being 60x110 feet, three others 60x90 feet each, one 55x90 feet and one 45x90 feet. The piers are to be sunk about 90 feet, and there will be approximately 84,000 cubic yards of concrete in the seven. The approaches are to be put on pile foundations, and will be constructed by the railroad company's forces. The steel spans are to be of the Petit type of truss, the longest being 722 feet. There will be four spans of 535 feet each and one span of 304 feet from center to center of piers.

C. H. Cartledge is chief engineer for the railroad company, C. R. Fickes will be resident engineer and H. K. Seltzer will represent the Union Bridge & Construction Co. during the erection of the bridge. Mr. Cartledge's address is 547 West Jackson Boulevard, Chicago, Ill.

By means of this bridge and railroad a connection of large capacity will be established between the Burlington and other railroads in which James J. Hill is interested and the Louisville & Nashville and the Atlantic Coast Line systems. The work will bring the Gulf and South Atlantic ports and the Lake and Pacific ports closer together, for New Orleans, Pensacola and Jacksonville will be put in direct touch with Portland, Seattle and Vancouver. The possibilities which are opened up are extensive, and none may accurately predict how far-reaching and vast they may become. Over this route the products of the South and the products of the prairies and the mountains will be exchanged, establishing a field of wonderful possibilities.

### "ORIENT" RECHARTERED.

#### Bondholders Buy in and Plan to Finish Arthur Stilwell's Railroad.

Application has been made at Topeka, Kans., to charter the reorganized Kansas City, Mexico & Orient Railway Co. for the purpose of completing its line, of which there are now in operation 725 miles from Wichita, Kans., to Alpine, Tex. Surveys have been made for an extension from Alpine to the Rio Grande, and the road is eventually to be connected up through to the port of Topolobampo, on the western coast of Mexico. Parts of the line in that country have been operated for some time.

The road has just been sold to a reorganization committee of the bondholders, the sale under the receiver-

ship proceedings taking place at Wichita and the price at which the road was bid in being \$6,001,000. A. M. Wickwire of New York represented the committee. He was the only bidder. John A. Mulvane, president of the Bank of Topeka, who is one of the incorporators of the new company, made application for a charter to Charles Sessions, Secretary of State. The capitalization is \$15,000,000. The other incorporators are E. Dickinson, S. W. Moore, C. A. Miller, John A. Eaton, Neal S. Doran and Charles W. German of Kansas City, Mo.

A report from Topeka says that the three leading shareholders in the new company are A. M. Wickwire and John B. Nevin of New York, and W. T. Kemper of Kansas City. Edward Dickinson will be the president. Construction of an extension from Wichita to Kansas City is also planned. About \$15,000,000 will be required to fulfill the plans outlined.

### DALLAS TERMINAL CONTRACT.

#### J. W. Thompson of St. Louis to Build the Union Station, Work to Start at Once.

A contract has been awarded to J. W. Thompson, Wainwright Building, St. Louis, to build the union terminals at Dallas, Tex. It is stated in a report from Dallas that the J. W. Thompson Construction Co. will fulfill the contract, which will involve an expenditure of about \$2,000,000. Altogether the station will cost when completed between \$5,000,000 and \$6,000,000. The contract just awarded by the directors, whose decision was announced by F. G. Pettibone, president, covers the construction of the station building. It is understood that work will begin immediately, and that the structure will be finished within 20 months. The building is to be composed of steel, brick and concrete.

Several months ago it was announced that another contractor had been given the contract, but it appears that the company never closed the agreement at that time, although it was fully intended to do so, according to the then report from Dallas. The plans have now been somewhat revised, but not in any particulars which would detract from the dimensions or beauty of the edifice. No radical changes have been made.

Capacity of the terminal will be far in advance of present needs. It will be able to accommodate 30 passenger trains simultaneously or to handle from 500 to 700 trains a day. The Santa Fe system and other trunk lines entering Dallas will use it.

It should also be noted that the express companies will erect buildings at the terminal for their own accommodation.

C. H. Dana is chief engineer of the Dallas Union Terminal Co.

### Oklahoma Interurban System.

A report from Ringling, Okla., says that J. W. Tipton and C. B. Hale will submit plans soon to the Oklahoma State Corporation Commission for the construction of an extensive system of interurban electric railways, which will eventually connect Kansas City, Mo., and Dallas, Tex. Mr. Hale is from Oklahoma City and Mr. Tipton was formerly with the Southern Traction Co. of Dallas. Both have been associated with the Oklahoma, New Mexico & Pacific Railway, of which John Ringling of Chicago is president since its beginning, about a year ago.

Tulsa, Okla., is to be the center of the interurban system, which would connect at Independence, Kans., with an interurban for Kansas City, while at Denison, Tex., it would connect with the Texas Traction Co.'s line from there to Fort Worth. The first construction proposed is from Tulsa via Broken Arrow, Coweta and Wagoner to Muskogee, Okla., and thence via McAlester to Denison. The route chosen from Tulsa northward is via Collinsville, Nowata and Bartlesville to Independence. It is also proposed to build southwest from Tulsa via Chandler and Shawnee to Oklahoma City, and from there via Chickasha and Lawton to Wichita Falls, Tex., connecting there with a projected interurban to Fort Worth. Still another line is contemplated from Tulsa westward via the Cushing oil field, Perry and Enid to Woodward, Okla.

It is planned to build the road without issuing bonds. The idea is to sell stock to railroad employees and not to depend upon capitalists for any of the money required. The promoters wish to avoid placing any mortgage upon the line.

### Freight Depot and Yards.

The Rock Island Lines have completed and put in service their new freight depot at Memphis, Tenn., the total improvement, including the structures and the yards, costing nearly \$1,000,000. It is situated at 397 Calhoun avenue, and the yards cover more than three blocks. The site is 540 feet wide on the avenue, and extends back 1300 feet, lying between South 4th street and Georgia avenue. The depot is 500 feet long and 50 feet wide. It is equipped with sliding steel doors, all of which can be opened simultaneously. The yards have five house tracks and a transfer platform, wagon driveways, automobile platform and machinery platform, six team tracks, track and wagon scales, etc. There will be altogether three miles of yard tracks. The yards are thoroughly drained by an independent sewer system. Part of the depot has offices upstairs. Plans for the improvements were made by A. T. Hawk, architect for the railroad company, and K. G. Williams, engineer, supervised the construction.

### Poor's Railroad Manual.

Poor's Manual of Railroads for 1914 is better and larger than any of its predecessors. It has more than 2000 pages, and embodies much additional and valuable information. Among the additional facts presented is data showing whether securities of various companies and different issues of each company are liable for the income tax. The publishers of this standard reference volume spare no effort to keep it fully abreast of the times and of the needs of bankers, railroad men, capitalists, investors and others who find it necessary to frequently consult it. All the material relating to the many railroads in the country is brought up to dates as close as possible to the time of publication of the Manual, the indexing of which is arranged for rapid and accurate reference. There are a number of maps of different railroads which are useful in connection with the text. In the preparation of this book the high standards of typography and presswork established years ago are thoroughly maintained, and the stock upon which it is printed is also of fine quality. The binding is of cloth, lettered in gold. Poor's Railroad Manual Co., 535 Pearl street, New York, is the publisher.

### Tuscaloosa and Akron Improvements.

Important improvements at Tuscaloosa and Akron, Ala., have been authorized by the Alabama Great Southern Railroad, work to be done at once. At Tuscaloosa a new passing track will be constructed north of the depot, and the switching lead will be extended. At Akron the track serving the depot will be extended 200 feet north and 2417 feet south. The passing track will be extended 1403 feet north, and two storage tracks, 1700 feet and 1518 feet in length, will be constructed. There will also be constructed a cinder-pit track 600 feet long and depressed track 400 feet long. Akron is a junction point with Southern Railway, and is also a terminal for Alabama Great Southern local freight trains. The improvements to be made are for the purpose of providing for better handling of present business and for increased business in the future.

### Contracts for Second Track.

Contracts for the construction of 19 miles of second track on the Washington division between Amherst and Elma, Va., have just been let by the Southern Railway. The contract for the eight miles from Amherst to Tye River was awarded to C. W. Lane & Co. of Atlanta, and for the 11 miles between Tye River and Elma to H. J. Dunavant & Co. of Chattanooga. The lines to be constructed are through the Virginia Piedmont country, and will involve some very heavy work. These are the first contracts let under the plan by which Southern Railway Co. expects to complete its double track between Washington and Atlanta in the next five years.

### New Equipment, Etc.

Norfolk & Western Railway has received 5 Pacific type passenger locomotives ordered several months ago. Pennsylvania Railroad, says a report from Philadel-

phia, where its headquarters are located, is understood to have invited bids for its proposed 100,000-ton rail order thus: Pennsylvania Steel Co., 22,000 tons; United States Steel Corporation, 44,000 tons; Cambria Steel Co., 22,000 tons; Lackawanna Steel Co. and Bethlehem Steel Co., each 6000 tons. All will be 100-pound sections excepting 5000 tons of the order for the Pennsylvania Steel Co., which will be 120-pound.

Washington, Baltimore & Annapolis Electric Railway has ordered 10 all-steel interurban passenger cars from the Cincinnati Car Co. They will be 51 feet 2 inches long, and will have arched roofs.

Pennsylvania Railroad has ordered 84 locomotives to be built in its shops at Altoona, Pa.

Southern Traction Co., Dallas, Tex., has ordered 12 street cars from the St. Louis Car Co., the electric equipment thereof to be furnished by the Southwest General Electric Co.

### Greenville & Western.

The Greenville & Western Railway Co. is the new name of the corporation operating the old Greenville & Knoxville Railway, which has just been taken out of the hands of a receiver. The line is 23 miles long from Greenville to River Falls, S. C., and W. H. Patterson, formerly president, has been receiver since October 6 last. Robert A. McTyler is now president and general manager; A. P. Coles, vice-president; Carl L. Lewis, treasurer, and J. T. Slade, superintendent, all of Atlanta, Ga., where Mr. Patterson also resides. There have been plans to extend the line through the mountains via Brevard, N. C., to a connection with the Knoxville, Sevierville & Eastern Railroad in Tennessee, but at present there is no indication of an effort to fulfill them.

### Street Railway Bonds Sold.

The Shreveport Railways Co. of Shreveport, La., has sold its issue of \$800,000 of first mortgage 5 per cent. bonds to the Hibernia Bank & Trust Co. of New Orleans. The bank has already disposed of a large part of the issue to investors.

### Railroad Notes.

J. Hainen has been appointed general superintendent of motive power and equipment of the Southern Railway at Washington to fill the vacancy caused by the death of Alex. Stewart, and E. C. Sasser is promoted to be superintendent of motive power for the northern and eastern districts at Washington in place of Mr. Hainen.

The Chickasawha & Jackson Railroad, owned by the Robinson Land & Lumber Co., has been made a common carrier, and has begun operations as such. It is about eight miles long from Chicora to Clara, in Wayne county, Mississippi, connection being made at Chicora with the Mobile & Ohio Railroad.

### Household Articles for Australia.

Harrison & Attwood, De Mestre Place, off 308 George street, Sydney, Australia, write to the MANUFACTURERS RECORD as follows:

"Our firm has been here for over 60 years. We are open to take up and push on consignment any good line well advertised. Any new line which must be used in every house is what we would like. Brilliantshine and Old Dutch Cleanser, two metal polishes heavily advertised, do a large trade here, and if any firm in your country has a good line and will back it up by extensive advertising we feel sure we could work up a good business. Our travelers call on all storekeepers throughout this State and we have other travelers calling on engineers."

### Wants Automobile Tires.

Morocco-American Trading Co., Tangier, Morocco, writes to the MANUFACTURERS RECORD as follows:

"We have an inquiry for solid motor-truck tires of the following sizes: 820x120 millimeters, front tires; 970x160 millimeters, rear tires; provided with inside wooden rims. Could you bring our needs to the notice of your advertisers and get us lowest quotations f. o. b. steamer New York? It is essential that information on the gross weight and cubic measurements of the tires, packed for export, be also given."



## MINING

### INCREASES IN SOUTHERN COAL.

#### Records Broken in the Output Last Year of Some States.

Texas mined 2,429,144 short tons of coal in 1913, valued at \$4,288,920, according to E. W. Parker of the United States Geological Survey. This production was nearly evenly divided between lignite and bituminous coal, with the balance slightly in favor of the latter. Both classes of coal showed increases in production in 1913, and both made their record output. The total production in 1913 exceeded that of 1912 by 240,532 short tons, or 11 per cent., in quantity, and by \$633,176, or 17 per cent., in value. Most of the increase in tonnage was derived from the lignite mines, whose output showed a gain of 190,451 tons; the production of bituminous coal increased 50,081 tons. In point of value, however, the advantage was as much in favor of bituminous coal as the gain in quantity was in favor of lignite. The value of lignite increased by \$123,971, while the value of the bituminous product increased by \$409,205.

The coal beds of Texas belong to three of the geologic systems—the Carboniferous, Cretaceous and the Tertiary. The Carboniferous coals are found in the north-central part of the State, the principal mining operations being in Eastland, Palo Pinto, Erath, Wise and Young counties. The Cretaceous coals occur in the southern part of the State, and are mined chiefly near Eagle Pass, in Maverick county. The coals of this district, which extends into New Mexico and are mined extensively at El Fenix, near Sabinas, and at Esperanzas, are classed as bituminous coals and in the southern portions of New Mexico make a fair-grade coke. The lignite beds are of enormous extent, and occur in a wide belt which stretches from the Sabine on the northeast to the Rio Grande on the southwest. Like the Cretaceous coals, these seem to improve in quality to the southwest, and near Laredo, in Webb county, the lignite is changed to a higher-grade coal, approaching canal in character and classed as bituminous. The principal lignite operations have been carried on in Anderson, Bastrop, Fayette, Henderson, Hopkins, Houston, Lee, Leon, Medina, Milam, Rains, Robertson, Shelby, Titus, Van Zandt and Wood counties.

The development of the lignite resources of Texas began in the closing decade of the nineteenth century, and except for a temporary setback in 1902 and 1903 after the discovery of petroleum near Beaumont, has progressed steadily with the development and growth in population. Lignite is found to be an excellent fuel for the gas producer, and the vast resources of Texas in this regard possess great potentialities for the future.

The first record of the production of bituminous coal in Texas is contained in the volume Mineral Resources of the United States, 1884, which states that the quantity mined in that year was 125,000 tons. The total production of lignite and bituminous coal in 1913 was almost twenty times the output of 1884.

The production of coal in Virginia in 1913 was 8,828,068 short tons, valued at \$8,952,653. Virginia broke all previous records in 1913 in the quantity of coal produced, according to Mr. Parker, and for the first time in six years the value of the output per ton exceeded \$1. The chapter added to the history of coal mining in Virginia by the record of 1913 is an interesting one. The quantity of coal produced exceeded that of 1912 by 981,430 short tons, or 12½ per cent., with a gain in value of \$1,434,077, or 19 per cent.; the quantity of coal mined by machines increased a little over a million tons; the average number of working days was exceptionally large; the average production per man reached nearly a thousand tons for the year; the bad practice of shooting coal off the solid was reduced to the extent of nearly a million tons, compared with 1912; the number of fatal accidents was reduced by a little more than two-thirds, and there was not a single strike or lockout reported. This record bears on its face the evidence that the year was exceptionally gratifying to both operators and employees.

For several years Virginia has stood relatively high in the quantity of coal produced by each man employed, and 1913 was no exception to the rule. The number of men employed in the coal mines of the State increased from 8678 in 1912 to 9162 in 1913, and the average working time from 251 days to 280. The average production per man in 1912 was 904 tons, and in 1913 it was 963 tons. The average daily production per man

was slightly less in 1913, being 3.44 tons, against 3.6 tons in 1912.

The production of coal in Tennessee in 1913 was 6,903,784 short tons, valued at \$7,883,714, according to Mr. Parker. More satisfactory labor conditions, better transportation facilities and an improvement in market conditions were evident in the coal trade in the State, and the effect of these three influences is exhibited in an increase in production of 430,556 short tons and \$503,811, or nearly 7 per cent., in both quantity and value compared with 1912. In neither 1912 nor 1913, however, did the production reach as high a figure as in 1910, when the maximum of 7,121,380 tons was obtained. On the other hand, in both of the later years the average value per ton was higher than in 1910.

The principal market for steam coal from the Tennessee mines is afforded by the railroads traversing the Southeastern States, most of which buy some of their coal from the Tennessee mines. The railroad purchases in 1913 were somewhat larger than in 1912, and one of the important systems, which for several years had been buying its supply from another source, again became a buyer of Tennessee coal.

The production of coal in Arkansas in 1913 was 2,234,107 short tons, valued at \$3,923,701, compared with 2,100,819 tons, valued at \$3,582,789, in 1912, a gain of 133,288 tons in quantity and of \$340,912 in value. The increase in 1913 is attributed by Mr. Parker chiefly to a larger railroad consumption, caused partly by a decrease in the supply of fuel oil and partly by increased business. This was offset to some extent by decreased domestic consumption, particularly in Texas, owing to an increased use of natural gas in that State. The prolonged drought in August and September also had an adverse influence on coal production, as it cut down the wheat crop in Kansas and the cotton crop in Oklahoma and Texas. Transportation facilities were improved over those of previous years, and a reduction in freight rates, put into effect in the latter part of the year, is expected to have a beneficial effect on the industry by enabling larger quantities of coal to be shipped to the Northwest, where Arkansas semi-anthracite has established a market and has already to some extent replaced West Virginia smokeless coal. The conditions at the close of 1913 presented a more hopeful outlook for the future than has existed in Arkansas for several years.

### APPALACHIAN OIL IN 1913.

#### Nearly 26,000,000 Barrels Reported by United States Geological Survey.

During 1913 the Appalachian oil field, embracing New York, Pennsylvania, West Virginia, southeastern Ohio and Kentucky, showed a slight decline—1.72 per cent.—in the production of petroleum, falling from 26,338,516 barrels in 1912 to 25,885,640 barrels in 1913—a decrease of 452,876 barrels. The value, amounting to \$63,619,677 in 1913, was, on the contrary, increased by 48.58 per cent., about the same proportional increase as was shown in 1912 over the previous year. The largest amount (2,307,422 barrels) was produced in April; the smallest amount (1,963,460 barrels) in February. The average price per barrel increased from \$1.63 in 1912 to \$2.46 in 1913, according to the United States Geological Survey.

The increase in the price of petroleum which began at the end of 1912 had the desired effect of stimulating drilling activity in all the Appalachian States. In New York this took the form chiefly of cleaning out old wells, with an immediate increase in production. In January, 1913, the product rose from a monthly total of 73,421 barrels to 77,029. February, besides being a short month, always shows low production, because of severe weather, but the product in 1913 was slightly greater than for the same month in 1912. The spring months showed a decline from the previous year, but the gain was nearly continuous during the drilling season and up to the close of the year, so that for the first time in seven years New York showed a gain in production. The increase amounted to 3.21 per cent., or from 874,128 barrels in 1912 to 902,211 barrels. Although this total is negligible in the product of the whole country, the gain is significant in showing what a rise in price can effect in a State where the average yield per well is less than anywhere else on earth. The usual course of production in New York for several years has been a decline of about 7 or 8 per cent., so that the change to 3.21 per cent. increase is really significant. The total value increased from \$1,401,880 to \$2,109,357, or 54.75

per cent., which was phenomenal. The average price for the year 1912 was \$1.60 and for 1913 it was \$2.40 per barrel of 42 gallons.

The conditions in New York were true also of Pennsylvania, and in this State also the stimulation by high prices was so great as to change a usual decline of 5 or 6 per cent. into a very slight increase—1.01 per cent. A total of 7,927,137 barrels was produced in 1913, against 7,837,948 barrels in 1912. The gain in total value was very great. The total value was \$19,716,148 in 1913 and \$12,886,752 in 1912, at an average price of \$2.49 in 1913 compared with \$1.64 in 1912.

The oil regions spread over so much territory in western Pennsylvania, including pools scattered from the New York to the West Virginia and Ohio boundaries, that the productive conditions vary considerably in different pools. All have long passed their prime, but they differ in their stages of exhaustion. Those in Venango county and the Bradford and other northern pools include the pools which originated the oil industry in the United States and international oil commerce, although Canada's oil production began at about the same time, and Roumania also was a productive country before the Drake, the first American well, was drilled. The wells in the southwestern counties of Pennsylvania have been drilled more recently.

It is a matter of some national pride that the spirit of thrift and conservatism in New York and Pennsylvania has kept these old wells productive, with no other aid than the homely ingenuity of the citizens of these States, who have contrived marvelously economical and efficient means to keep the wells pumping with little recourse to special legislation on the one hand or to the use of large capital on the other.

The fact is to be emphasized also, in accounting for this feat in increasing the production from those old pools, that it was due chiefly to skillful work in once more cleaning out wells that have previously been cleaned again and again, rather than to new production. In the southwestern counties of Pennsylvania some encouraging wells were drilled. Thus in Washington county, near Venice, early in the year several new wells started with 35 to 50 barrels a day. In Allegheny county interest was stimulated by a 250-barrel well near Duff City, and a 40-barrel well was struck near Walker's Mill. In Greene county the Bristoria field yielded a few promising wells, and a 35-barrel well was obtained in Westmoreland county. Butler county, near Parker, gave a few 15-barrel wells.

Petroleum is produced in 23 counties of West Virginia, from Harrison county on the east to the western State line, and from Pennsylvania southwest to Mingo county. This State, which is the home of the anticlinal theory, as developed by Dr. I. C. White, State geologist, possesses ideal structure for the storage of oil over so large an area that many pools have been developed and the drilling of wells yielding as much as 1000 barrels a day of initial production is still frequent. Conditions are still favorable in the State for the development of new prolific pools that would bring the total yield of the State beyond the maximum. In 1912, for example, the development of the Blue Creek pool, in Kanawha county, increased the total production for that year to 12,128,962 barrels. During the year the pool declined, and so great a result in 1913 was not to be expected; nevertheless the total reached 11,567,299 barrels, a loss of only 4.63 per cent. This good record was due to the extension of the Blue Creek pool, and chiefly to the increases in Roane county, where the Berea Grit and Scaffold Run pools, in the Spencer district, developed a product of over 1000 barrels a day early in the year and increased as the weather became better for drilling. Harrison, Pleasants, Woods, Monongalia, Ritchie, Gilmer, Morgan and Brook counties added many gushers yielding from 200 to 1000 barrels a day.

While no pool equivalent to the Blue Creek was developed during the year, drilling was more active than ever before, owing to the high prices for oil. The total value increased 44.67 per cent., or from \$19,927,721 in 1912 to \$28,828,814 in 1913.

Interest in oil development in Ohio was almost entirely confined to the eastern and central parts of the State, where drilling was most active in Belmont, Hocking, Perry and Fairfield counties. No considerable pools were developed, and in spite of a drilling campaign skillfully planned and carried out with great energy by the larger companies, the production declined from 8,969,007 barrels in 1912 to 8,781,468 barrels in 1913, or about 2.09 per cent. Both the Lima district and the southeastern district shared in the decline, which amounted to 48,685 barrels in the southeast and to 138,854 barrels in the Lima district. The average price

for the two districts increased from \$1.35 in 1912 to \$2 in 1913, and the value of the State's total product increased 45.1 per cent., or from \$12,085,908 to \$17,538,452.

The oil output of Kentucky is a little over half that of New York. It comes chiefly from a considerable number of small wells, most of them old, in Wayne county. Within the last few years, however, drilling efforts have been active to extend the West Virginia pools over into Kentucky, with only moderate success in Lawrence county. Other counties nearby have shared in this excitement, and some oil has been added to the supply by deepening wells in several eastern counties. Meanwhile oil has been found in the western part of the State as a result of skillful geologic study by J. H. Gardner and others in Ohio county. This has led to much wildcatting in other western counties, more or less carelessly directed and as yet without fully compensating returns.

Increased prices proved stimulating in Kentucky also, and the total increased from 484,368 barrels in 1912 to 524,568 barrels in 1913, a gain of 8.3 per cent., while the total value increased from \$124,842 to \$675,748, or 59.06 per cent.

The following table shows the petroleum production in the Appalachian field, by States, for 1912 and 1913, in barrels:

State.	1912.	1913.
New York . . . . .	874,128	902,211
Pennsylvania . . . . .	7,837,948	7,927,137
West Virginia . . . . .	12,128,962	11,567,299
Southeastern Ohio . . . . .	5,013,110	4,964,425
Kentucky . . . . .	484,368	524,568
	26,388,516	25,885,640

#### Tennessee Copper Co.

Progress is being made on the extensive improvements decided upon some months ago by the Tennessee Copper Co., Ducktown and Copperhill, Tenn. Practically all contracts have been awarded, and when completed will provide the company with facilities for largely increasing its output. Equipment is now being placed preparatory to erecting the new breaker or shaft-house and power plant at McPherson mine, foundations to be concrete, with steel superstructure. This plant will be driven by electricity, and have a daily capacity of 1000 tons of ore. When the McPherson improvements are completed the Burra enlargement will be undertaken. The company will continue active mining during the progress of these improvements. It is rumored that about \$1,000,000 will be the cost of the betterments.

#### Main Island Creek Coal.

Shipments are now being made from the new Main Island Creek properties, in Logan county, West Virginia, of the Wyatt Coal Co. of Cincinnati. This company has 21,000 acres about nine miles above Logan, and will proceed with developments until the entire acreage has 20 mines, with an annual output of 3,000,000 tons. It has erected tipplers at six of the mines under development. Besides this development, the company is mining 2,000,000 tons annually of Logan splint and Cabin Creek splint and gas coal.

#### Various Kinds of Machinery

V. de Muslera y Noriega (Maquinaria) Gijon, Spain, write to the MANUFACTURERS RECORD as follows:

"Put us in communication with manufacturing houses of your country engaged in following lines: Boilers and steam engines; apparatus and equipment of all kinds intended to economize labor; drills for mines; air compressors; tubing; piping and flexible metal hose; supplies of all kinds connected with above lines. We would like to get acquainted with manufacturers of oils, gas, cement, thread, woven goods, hats, leather and chemical products; also like to know something about elevators, wire rope tramways and similar installations. The terms on which we do business are exclusive agents and payment at end of 30 days after receipt of goods at this place. Our references are Chamber of Commerce of Detroit, Manufacturers' Association of New York and Commercial Museum, Philadelphia."

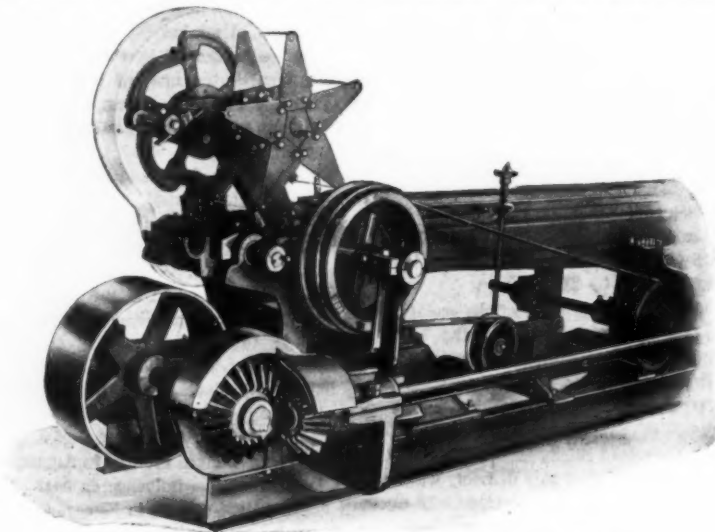
The postoffice at Little Rock, Ark., has installed six motor trucks for its mail-carrying service in that city.

## MECHANICAL

Illustrations and descriptions having news value pertaining to developments in machinery, mechanical devices and inventions will be considered for use in this department.

#### Steele Automatic Brick End Cutter.

The automatic end cutter shown in the accompanying illustration was developed and is manufactured by J. C. Steele & Sons, Statesville, N. C., and is used in connection with various other brick-making machinery in some of the largest brick-making plants.



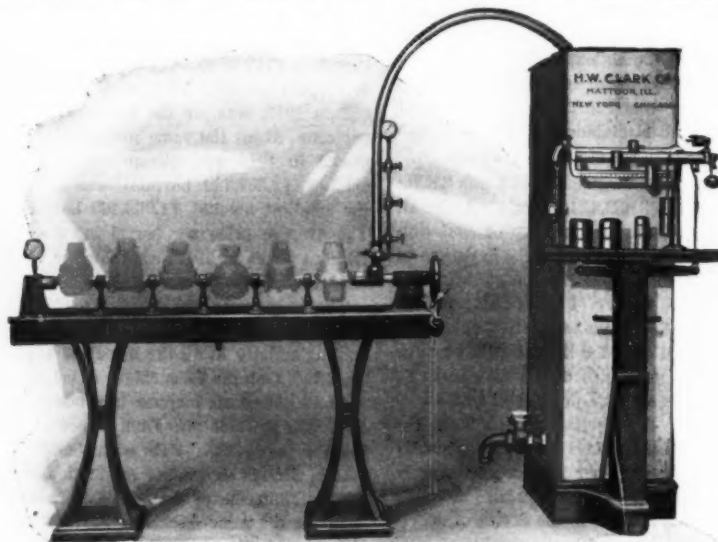
IMPROVED AUTOMATIC END CUTTER FOR BRICK MAKING.

It is stated that some of these cutters have cut over 250 bricks per minute, and that over 40,000,000 bricks have been cut with inappreciable wear. They are constructed to be also suitable for smaller plants, and are stated to be particularly adapted to Southern clays.

#### Clark Meter Tester.

The increasing use of meters for measuring water supplies in cities, residences and industrial plants requires reliable meter testers in order to assure accurate meters.

The Clark tester shown in the accompanying illustration has been developed as the result of 25 years' experience with water meters. It is stated that the original meter tester which was the forerunner of the present type is still in use.



H. W. CLARK METER TESTER.

The machine is adapted to test one inch, three-quarters inch and five-eighths inch meters in a single operation. A string of meters as shown in the illustration may be connected up quickly.

The table and legs are of cast iron, machine finished, and the trimmings are of polished brass. Waste water

is cared for by drain pipe. The scale is specially designed with three bars for the testing machine, and is graduated for percentages. The tester is suited to the largest or smallest water supply departments, and presents a means by which such departments may keep records of the accuracy of meters in use by consumers. In case of complaint, the test shows the correctness of the meter. The equipment may be furnished without the tank and scale where they are not required.

#### For Developing 1,000,000 Acres.

Plans for developing 1,000,000 acres of land in Texas are being formulated by the Jackson-Vreeland Company

of Kansas City, which has purchased the property. This land is located on both sides of the Trinity River in Trinity, Walker and Houston counties, Trinity Valley, on the International & Great Northern Railway. The company contemplates arranging for dividing the tract into farms and for complete colonization, its main offices to be located at Trinity.

#### For a Pickle Plant.

F. M. Runnels, secretary of the Board of Trade of Gainesville, Fla., informs the MANUFACTURERS RECORD that many carloads of cucumbers left annually in the fields suggest the opportunity for a large pickling plant in that vicinity, with numerous salting stations.

The American Peat Society, John N. Hoff of New York, president, and Julius Bordello of New York, secretary-treasurer, will hold its eighth annual meeting at Duluth, Minn., August 20-22.

South Carolina farmers have purchased since the first of this year more than 1,000,000 tons of fertilizers, a record in such purchases.



# Construction Department

## IN ORDER TO FOLLOW UP

Properly the Construction Department items, please bear in mind the following statements:

### EXPLANATORY

The MANUFACTURERS RECORD seeks to verify the items reported in its Construction Department by full investigation. It is often impossible to do this before the item must be printed or else lose its value as news, and in some items it is found advisable to make statements as "reported" or "rumored," and not as positive information. If our readers will note these points they will see the necessity of the discrimination. We are always glad to have our attention called to errors that may occur.

### HOW TO ADDRESS

The name of one or more incorporators of a newly incorporated enterprise should always be written on letter addressed to the official headquarters or to the town of the parties sought, as may be shown in the item. Sometimes a communication merely addressed in the corporate or official name of a newly established company or enterprise cannot be delivered by the postmaster. By following these general directions the postoffice will generally be enabled to deliver your mail promptly, although it is inevitable that some failure by the postal authorities to deliver mail to new concerns will occur, as our reports are often published before new companies are known and before they have any established office for the receipt of mail.

### WRITE PERSONAL LETTERS

In communicating with individuals and firms reported in these columns a letter written specifically about the matter reported will receive better and quicker attention than a circular. In most instances a return postal card or addressed and stamped envelope should be enclosed with letter.

In correspondence relating to information published in this department, it will be of advantage to all concerned if the Manufacturers Record is mentioned.

### DAILY BULLETIN

The Daily Bulletin of the Manufacturers Record is published every business day in order to give the earliest possible news about new industrial, commercial, building, railroad and financial enterprises organized in the South and Southwest. It is invaluable to manufacturers, contractors, engineers and all others who want to get in touch at the earliest moment with new undertakings, or the enlargement of established enterprises. The subscription price is \$25 per year.

All advertising contracts in the Manufacturers Record for three months or longer include a subscription to the Daily Bulletin for the contract period, as well as a subscription to the Manufacturers Record.

### BRIDGES, CULVERTS, VIADUCTS

Ga., Vidalia.—Altamaha Bridge Co. has plans for lift bridge to be constructed across Altamaha River at Piney Bluff, connecting Appling and Toombs counties; timber trestle approaches about 4340 ft. long; substructure to be steel cylinder piers filled with concrete; superstructure to consist of 2 fixed spans, each 180 ft.; 1 fixed span, 90 ft.; 1 fixed span, 60 ft.; 1 lift span, 176 ft.; width of roadway, 16 ft.; bonds issued. (Previously noted.)

Ky., Paducah.—Paducah & Illinois Ry. Co., C. H. Cartledge, Ch. Engr., 547 W. Jackson Blvd., Chicago, has final plans for construction double-track railway bridge and railway across Ohio River, from Metropolis, Ill., to Paducah; length, including approaches, 5650 ft.; completed bridge will cost about \$3,500,000; let contract to Union Bridge & Construction Co., Sharp Bldg., Kansas City, to construct 7 pneumatic piers costing about \$1,100,000; 1 pier base 110x60 ft.; 3 bases 90x60 ft.; 1 base 90x55 ft., and 1 base 90x45 ft.; each sunk about 90 ft.; about 84,000 cu. yds. concrete in 7 piers; approaches on pile foundations and constructed by railway company's forces; steel spans of Petit type truss; 1 span 722 ft., 4 spans 555 ft., and 1 span 304 ft., center to center of piers; C. R. Fickes, Res. Engr. for Paducah & Illinois Co.; H. K. Seltzer, resident representative of Union Co.; Paducah & Illinois Ry. Co. is subsidiary of Chicago, Burlington & Quincy and Nashville, Chattanooga & St. Louis Railway Companies. (Previously mentioned.)

Ky., South Portsmouth.—Chesapeake & Ohio Ry. Co., M. J. Caples, V.-P., Columbus, O., is considering two locations for bridge across Ohio River near Portsmouth, O., to near South Portsmouth, Ky.; until location is decided will not announce details; recent report stated planning three through truss spans, 225 to 750 ft. long. (Lately noted.)

La., New Orleans.—Council considering ordinances providing for construction of lift bridge over New Basin Canal of line of City Park Ave. and for steel frame and concrete highway bridge across London Ave. drainage canal; A. G. Ricks, Commr. Public Finances.

Mo., Graham.—Comms. of Nodaway, Andrew and Holt counties contemplate constructing bridge over Nodaway River 5 mi.

from Graham. Address Nodaway County Comms. at Maryville, Mo.

N. C., Franklin.—Highway Com. Franklin Township, Macon county, will construct concrete culverts and bridges in connection with grading and paving, etc.; bids on and after July 10. (See Road and Street Work.)

Okla., Kaw City.—Kay county is considering repairs to several bridges. Address County Comms.

Tenn., Townsend.—Blount County Comms., Maryville, let contract Luton Bridge Co., York, Pa., at \$4421 to construct 3-span reinforced concrete bridge over Little River near Townsend.

Tex., Bastrop.—Bastrop county voted \$50,000 bonds to construct concrete low-water bridge across Colorado River at Nash's Ferry and to complete system of roads. Address County Comms. (Lately noted.)

Tex., Dallas.—Gulf, Colorado & Santa Fe Ry., F. Merritt, Ch. Engr., Galveston, Tex., is reported as considering construction of viaduct over tracks on S. Meritt St.; estimated cost \$200,000, of which approaches will cost \$100,000 and bridge \$100,000; approaches to be 300 to 450 ft. long.

Tex., Fort Worth.—Tarrant County Commissioners will construct approaches to E. 4th St. Bridge, which will connect Fort Worth with Riverside; plans by H. P. Haynes, County Engr., Fort Worth; bids until July 6.

Tex., Houston.—Harris County Comms. let contract Jas. Sullivan at \$2885 to construct culverts on Pasadena Rd. (See Road and Street Work.)

Tex., Houston.—Harris county will construct bridge over Big Cypress on Hockley and Katy Rd.; bids opened July 6; H. L. Washburn, County Auditor.

Tex., Houston.—Harris county will construct 5 concrete culverts on Westfield and Clark-St. Rd.; bids until July 13; H. L. Washburn, County Auditor. (See Machinery Wanted.)

Va., Leesburg.—Loudoun County Comms. will construct bridge across Broad Run, near Paeonia Springs; 83 ft. long; 4 standard reinforced concrete 20-ft. spans; bids until July 26; for further information address State Roads Commission, Richmond, Va. (See Machinery Wanted.)

Va., Leesburg.—Loudoun County Comms.

will construct 2 bridges—one over Horse Pen Creek near Sterling, 62 ft. 6 in. long; one across Crouch's Creek near Purcellville, 35 ft. 6 in. long; reinforced concrete; concrete substructure; 12-ft. roadways; bids until July 16; for further information address State Roads Com., Richmond, Va. (See Machinery Wanted.)

Va., Lynchburg.—City of Lynchburg, Amherst county, Norfolk & Western Ry. (J. E. Crawford, Ch. Engr., Roanoke), Chesapeake & Ohio Ry. (F. I. Cabell, Ch. Engr., Richmond) and Southern Ry. (B. Herman, Ch. Engr., Washington, D. C.) are reported to have agreed upon construction of bridge over James River at Lynchburg; Amherst County Comms. agreed to construct approaches on its side of structure, cost not to exceed \$10,000.

### CANNING AND PACKING PLANTS

Fla., Detroit.—Company organized with \$25,000 capital stock by M. G. Tracey of Miami, J. M. Powers of Detroit and others; will establish cannery. (See Electric Plants.)

Fla., Eagle Lake.—Eagle Lake Packing Co. organized; W. M. Hampton, Pres.; S. G. Wilson, V.-P.; F. S. Lee, Secy.; W. F. Hutchinson, Treas. (Lately noted.)

Fla., Winter Haven.—Winter Haven Packing-house Co. let contract to Fred W. Owen, Winter Haven, to erect addition 48x32 ft.

Mo., Fair Play.—Fair Play Canning Co., capital stock \$5000, incptd. by D. A. Hamby, R. J. Paynter and L. L. Hunt.

Tex., Lockhart.—City voted \$3000 bonds to construct wagon and foot bridge over Town Branch. Address The Mayor.

Tex., Palacios.—Palacios Preserving Co., capital stock \$5000, incptd. by A. P. Clark, Chas. Morris and V. E. Melberg.

Va., Norfolk.—Southern Fish & Oyster Co., capital \$10,000, incptd.; Andrew Etzkern, Pres.; W. E. Twine, Jr., Secy.

### CLAYWORKING PLANTS

Ga., Macon.—Pipe, etc.—Southern Pipe & Culvert Co., capital \$40,000, incptd. by R. E. Findley, John A. Porter, A. J. Matthews and G. W. Matthews to mfr. pipe, etc., from clay.

Ky., Hopkinsville.—Bricks.—Dalton Bros. Brick Co. will make repairs to sheds and kilns reported burned. (See Machinery Wanted.)

N. C., High Point.—Cementtile.—Cementtile Co., authorized capital \$20,000, incptd. by C. F. Lawrence, B. I. Lawrence and Dallas Zollcoffer, Jr.

S. C., Camden.—Bricks.—G. A. Guignard of Columbia, S. C., Prop. of Camden Brick Co., will rebuild plant lately noted burned.

S. C., Ware Shoals.—Bricks.—L. B. Fulenwider, Greenwood, S. C., is progressing with brick plant near Ware Shoals; frame 32x45 ft. building; also 3 wings, 54x7 ft., for curing-rooms; building cost about \$200 and machinery (supplied) about \$1200; capacity, 15,000 per 10 hours.

W. Va., Wayne.—Bricks and Tile.—Wayne Brick & Tile Co., capital stock \$25,000, incptd. by B. J. Pritchard, P. H. Napier, James R. Keese, O. J. Rife and others.

W. Va., Bluefield.—Bricks.—Bluefield Brick Co., capital stock \$50,000, incptd. by G. M. Barger, Florence Barger, Floyd Henderson and others.

W. Va., Black Betsey.—Block and Tile.—Granite Block & Tile Mfg. Co., capital stock \$50,000, incptd. by T. W. Woodward, O. F. Payne and B. Woodward of Charleston, W. Va.; G. C. Morris and M. M. Morris of Black Betsey.

### COAL MINES AND COKE OVENS

Ky., Lexington.—Commonwealth Coal & Timber Co., capital \$10,000, incptd.; Sam M. Wilson, Pres.; C. M. Harbison, V.-P. and Treas., both of Lexington; Geo. S. Shanklin, Jr., Secy., Whitesburg; will develop coal and timber land in Perry, Knott, Leslie and Letcher counties.

Ky., Logmont.—Lower Hignite Coal Mining Co., capital \$20,000, incorporated by A. H. Pennebaum, Charles E. Ralston and W. E. Gunn.

Mo., Kansas City.—Chilhowee Coal & Coke Co., capital \$200,000, incptd. by Milton Walsh, Howard B. Henry and Arthur Nelson.

Va., Hurricane.—Cinchfield Coal Corp., Dante, Va., let contract Roberts & Schaefer Co., Engr. and Contr., McCormick Bldg., Chicago, at about \$50,000 to design and install Marcus patent 5-track steel coal tippie with 600-ft.-long inclined car haul, electrically operated, at Hurricane mine.

W. Va., Clothier.—Spruce Fork Coal Co., capital stock \$50,000, incptd. by Wm. Bell Watkins of Cheney, Pa.; J. Keating Wilcox, John L. Montgomery, H. E. Marlor and Andrew W. Porter, all of Philadelphia, Pa.

W. Va., Tams.—Wyoming Coal Co., capital \$100,000, incptd. by W. P. Tams, Jr., and John W. Wilson of Tams, P. T. Watts, Jr., Lynchburg, Va., and others; develop 3000 acres.

W. Va., Tams.—Wyoming Fuel Co., capital \$100,000, incptd. by W. P. Tams, Jr., and John W. Wilson of Tams, P. T. Watts, Jr., Lynchburg, Va., and others.

### CONCRETE AND CEMENT PLANTS

Ala., Ragland.—Portland Cement.—Coosa Portland Cement Co., capital stock \$200,000, will be organized with John B. Stevenson, third, of Philadelphia, as Pres.; will acquire Atlantic & Gulf Portland Cement Co. plant bid in July 2 by G. Ransom Hartman of Baltimore, representing bondholders of Atlantic & Gulf corporation; new management proposes extensive improvements, details not determined; present monthly capacity is 30,000 blbs. Portland cement.

N. C., Oxford.—Concrete Bricks, etc.—Oxford Brick & Tile Co., H. M. Shaw, Propr., will establish concrete brick and tile plant; is erecting frame building, 100x32 ft.; one-half for sand, cement and machinery; other half for kilns, 5 of which will be 45 ft. long for steam curing; install concrete brick machinery with power mixer, conveyors, etc.; automatic arrangement for handling on cars; product, concrete bricks, tile, etc., fancy and plain; probably make roofing tiles. (Lately noted under Clayworking Plants.)

Okla., Oklahoma City.—Flooring.—Southwestern Concrete Flooring Co., capital stock \$10,000, incptd. by Ross N. Lillard and F. B. Williams of Oklahoma City and C. Beatty of Enid.

### COTTON COMPRESSES AND GINS

Ala., Selma.—Farmers' Cotton Gin Co., W. O. Kennan, Secy., will build gin; let contract Frank Seale to erect 2-story frame building; estimated cost \$10,000.

Ark., Argenta.—Little Rock Compress Co., W. M. Kavanaugh, Pres., Little Rock, let contract F. L. Graham, Little Rock, to erect compress; mill construction; capacity sufficient to handle at one time under roof 20,000 bales; estimated cost \$80,000; purchased machinery. (Lately noted.)

Ark., Lepanto.—Company organized with \$5000 capital stock; W. M. Pritchett, Pres.; W. M. Potter, V.-P.; J. R. McFadden, Secy. Treas.; purchased S. H. Warren gin and contemplates installing machinery.

Ark., Yarbrow.—Bertig Gin Co., S. S. Sternberg, Pres., Blytheville, Ark., will erect gin; galvanized-iron construction; cost \$3500; install four 80-saw outfit. (Lately noted incptd., \$10,000 capital.)

Ga., Soperton.—Farmers' Gin, G. A. Sammons, Mgr., will operate gin; plant equipped. (Mr. Sammons lately noted to install \$8000 gin.)

Okla., Idabel.—Idabel Gin Co. will establish cotton gin; purchased machinery.

Okla., McAlester.—Smith Cotton & Ginning Co., capital stock \$30,000, incptd. by M. M. Smith of Holdenville, E. W. Wilburn of Tecumseh, and N. Bert Smith of Wewoka.

S. C., Inman.—Inman Gin Co., capital \$5000, incptd. by J. H. Ballenger, G. C. Foster, S. P. Clark and J. C. DeShields.

Tex., Bowie.—Malone Gin Co. (lately noted incptd., capital stock \$10,000) organized; C. R. Morgan, Pres.; J. W. Malone, V.-P. and Mgr.; M. D. Moody, Secy.; general ginning; locate in several towns.

Tex., Windom.—Farmers' Gin Co., capital stock \$10,000, incptd. by A. W. Wheeler, G. W. Timmons and M. H. Wood.

W. Va., Harrieville.—Addis Compressing Co., capital stock \$10,000, incptd. by Mathew Dettelbach, Chas. S. Beardslee and D. W. Dettelbach of Cleveland, O.; Victor F. Cooper and Bert Adams of Harrieville.

In writing to parties mentioned in this department, it will be of advantage to all concerned if the Manufacturers Record is mentioned.

## COTTONSEED-OIL MILLS

Ala., Attalla.—Attalla Oil & Fertilizer Co., C. B. Forman, Pres., will erect \$10,000 building on site lately noted purchased for cottonseed-oil mill and fertilizer factory; construction by company; plans by N. B. Ware.

Tex., San Antonio.—John D. Middleton, Gen. Mgr. Texas Refining Co., Greenville, Tex., and other officers of that corporation plan construction cottonseed-oil mill costing \$125,000; erect 2-story 220x180-ft. building of brick, concrete and steel; purchased machinery for daily capacity 100,000 lbs. lard and compounds.

## DRAINAGE SYSTEMS

Ark., Jonesboro.—Jas. Karr, Fort Wayne, Ind., has contract for about 2,500,000 cu. yds. excavation; dipper dredge work; will require 3 machines—one 2½-yd. 70-ft. boom, one 1½-yd. 45-ft. boom and one 1½-yd. 40-ft. boom; will use new machinery.

Ark., Osceola.—Comms. Drainage Dist. No. 12 let contract Wm. Crumpecker, Morehouse, Mo., to construct drainage system; canal 17.3 mi. long; levee 2 mi. long; Engr., St. Francis Valley Engineering Co., Osceola; John W. Scobey, Atty., Lake City. (Lately noted.)

Ark., Searcy.—Overflow Drainage Dist. will construct main ditch and 22 laterals; main ditch, 7 mi. long, bottom width varying from 24 to 28 ft.; average depth, 8 ft.; about 594,700 cu. yds. excavation; C. M. Ergenbright, Chrmn. Comms.; E. E. Mashburn, Engr. (See Machinery Wanted.)

La., Donaldsonville.—Comms. Bayou Conway Dist., Jonas Weill, Pres., Litcher, La., will issue \$90,000 bonds to construct drainage system. (Lately noted to have survey made by C. S. McFarland.)

Miss., Tunica.—Comms. Yazoo-Coldwater Drainage Dist. considering plan to replace proposition for \$3,600,000 expenditure to drain 340,000 acres; now planning \$600,000 investment to drain 200,000 acres; propose constructing canal from Marks, on Coldwater River, north about 25 mi. to that river above Askew; new acreage is in Tunica, Tate, Quitman and Panola counties; new plan would provide drainage at cost \$3 per acre for district affected by Coldwater River, as compared to \$10.75 per acre of original plan; Engr., Morgan Engineering Co., Memphis, Tenn. (Original plan lately noted.)

Tex., Beaumont.—Drainage Dist. No. 5 of Jefferson county (Hillebrandt Dist.) voted \$175,000 bonds to construct drainage system. Address County Comms. (Lately noted.)

## ELECTRIC PLANTS

Ark., Harrison.—Harrison Electric Light & Ice Co. changed name to Harrison Gas & Electric Co. and increased capital stock from \$45,000 to \$100,000.

Fla., Apopka.—City votes July 18 on \$13,000 bonds to construct electric-light plant; W. R. McLeod, Mayor.

Fla., Detroit.—Company organized with \$25,000 capital stock by M. G. Tarcey of Miami, J. M. Powers, B. P. Forrest, Jack Youso and others of Detroit to establish electric-light and ice plants, steam laundry and cannery.

Fla., Fort Meade.—City contemplates voting on bonds to purchase electric-light plant. Address The Mayor.

Ga., Valdosta.—City is considering construction of electric-light system; \$10,000 available; W. D. Peoples of Fire and Light Committee will make investigations.

Ky., Olive Hill.—Tygart Electric Co. will be inceptd., capital \$8000 (J. A. Maddox and others interested) to establish electric-light system and ice plant; purchase machinery and supplies about Aug. 1. (See Machinery Wanted.)

Ky., Shepherdsville.—Shepherdsville Electric Light, Ice & Water Co., capital \$10,000, inceptd. by S. W. Bates, Conrad Maraman, W. E. Ashby and W. T. Lee.

Miss., Ripley.—City granted franchise for electric light plant. Address The Mayor.

Mo., Clarence.—City voted \$10,000 bonds for electric-light plant improvements. Address The Mayor.

Okla., Blackwell.—City is reported to vote on bonds for electric-light plant. Address The Mayor.

Okla., McAlester.—McAlester Light & Power Co., capital stock \$10,000, inceptd. by J. B. McAlester, W. B. McAlester and E. A. Daniels.

Okla., Spavinaw.—Kay Water & Power Co. inceptd. by Walter E. Kay and others. (See Water-works.)

S. C., Walhalla.—City votes July 6 on

\$6000 bonds to build and operate electric-light plant. W. M. Brown, Mayor.

Tenn., Newport.—City granted franchise Chas. L. Goughnor to furnish electric lighting.

Tex., Dayton.—Dayton Light & Power Co. has completed plant. (Lately reported as to build electric-light and power plant.)

Tex., Mexia.—Mexia Water, Light & Power Co., O. H. Brannon, Gen. Mgr., will expend \$25,000 for betterments and extensions; let contract Carl Kahl, Mexia, to build powerhouse of brick construction; also has let contracts for additional machinery.

Tex., Naples.—Northwestern Electric Co. of Texas, capital stock \$15,000, inceptd. by J. C. Martin, M. Galloway and J. D. Bedell.

W. Va., Wheeling.—Neff-Burns Electric Co., capital stock \$25,000, inceptd. by W. S. Neff, E. J. Neff, Wm. J. Burns and others.

## FERTILIZER FACTORIES

Ala., Attalla.—Attalla Oil & Fertilizer Co., C. B. Forman, Pres., will erect \$10,000 building; lately noted. (See Cottonseed-oil Mills.)

## FLOUR, FEED AND MEAL MILLS

Ky., Corydon.—Corydon Milling Co. will operate flour mill with 125 bbls. capacity; is erecting warehouse to have capacity for 30,000 bus. storage. (Lately noted as increasing capital to \$20,000.)

Ky., Sharp.—Sharp Milling Co., capital \$5000, inceptd. by Sol King, Calvin Rountree and J. M. Rountree.

Okla., Oklahoma City.—Shawnee Milling Co., Shawnee, Okla., is reported to build mill.

Okla., Strong City.—Grain Elevator.—Maney Bros. are reported to build grain elevator.

Okla., Wilson.—Farmers' Mill & Milling Co., capital stock \$6000, inceptd. by Lottie Lumsden, Ed Fertsch and Wm. Green.

PROPOSAL ADVERTISEMENTS  
IN THIS ISSUE

PUBLISHED ON PAGES 65, 68, 69

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Okla., Woodward.—Woodward Cotton Co. will build flour mills; daily capacity 50 bbls.; also install feed grinders.

Tex., Edinburg.—M. R. Beringer will establish corn-shelling plant.

Va., Clarksville.—C. C. Kirby will build flour mill.

## FOUNDRY AND MACHINE PLANTS

Fla., Plant City.—Boiler Foundry, etc.—Van Hoodonk and Park leased foundry, machine shop and boiler works; will enlarge and improve; install new machinery.

La., New Orleans.—Nut Machinery.—Louisiana Nut & Machine Co., Sam Blum, Pres., 327 Poydras St., has taken over equipped machine shop at 862 Pehoultoulas St. and will mfr. patented machines for cracking pecans and other nuts. (Lately noted inceptd., \$100,000 capital.)

Ky., Middlesboro.—Machine Shop.—H. J. Herron of King Mountain Coal Co., Clairfield, Tenn., and W. D. Householder, Prop. Knoxville Armature Works, Knoxville, Tenn., leased building on 19th St. and will equip as machine shop for electrical repair work, such as armature winding, refilling of commutators and electric welding; install \$5000 worth of machinery; operate as Middlesboro Electrical Works.

S. C., Charleston.—Cotton Compresses.—American High-Density Compress Corp. chartered; organized with C. B. Hulet, Pres., and John B. Reeves, Secy.-Treas.; P. O. address Box 420; plans to introduce machines to compress plantation bales to uniform and symmetrical size of great density. (Lately noted under Cotton Compresses and Gins.)

Tex., San Angelo.—Plow and Tractor.—B. W. Reed and others will erect factory to mfr. subsoil plow and tractor; purchased site.

Va., Cambria.—Compressors and Pumps.—Guthrie Air Compressor & Pump Co., capital

\$5000, inceptd. to mfr. compressors, pumps, etc.; J. C. Brown, Pres.; V. J. Guthrie, V.-P.; C. R. Smith, Secy.-Treas.

Va., Richmond.—Electric Motors.—Richmond Electric Works, Edward J. Willis, 801 McDonough St., South Richmond, contemplates rebuilding plant reported burned at estimated loss of \$75,000.

W. Va., Bluefield.—Standpipe Balance Valve. Dawson Standpipe Balance Valve Co., capital stock \$50,000, inceptd. by W. I. Short, J. R. Anderson, W. R. Dawson and others.

## GAS AND OIL ENTERPRISES

Fla., Palatka.—Gas Plant.—Solomon-Norcross Co., Atlanta, Ga., purchased Palatka Gas Light & Fuel Co. plant and will improve.

Ky., Scottsville.—Advance Oil Co., capital \$25,000, inceptd. by Frank Day, Frank Coss, W. A. Read and S. O. Johnson.

La., Abbeville.—Vermillion Petroleum Co., capital stock \$30,000, inceptd. to drill for oil and sulphur on Palombo farm; Chas. K. Gribble, Pres.; C. C. Broussard, V.-P.; J. E. Nettles, Secy.-Treas.

La., Lake Charles.—Community Oil Co., capital \$60,000, inceptd.; John N. Groesbeck, Pres. and Gen. Mgr., San Antonio, Tex.; A. J. Leithead, V.-P., and Jas. M. Balch, Secy.-Treas., both of Lake Charles.

La., Shreveport.—Federal Petroleum Co., capital stock \$200,000, inceptd.; Jas. L. Autry, Pres.; E. E. Clark, V.-P.; G. W. Hardy, Secy.; W. C. Hagg, Treas.

N. C., Statesville.—Gas Plant.—Statesville Gas Light & Fuel Co., authorized capital \$125,000, inceptd. by Harry P. Grier of Statesville, Geo. M. Bridgman of Philadelphia, Pa.; Frank B. Moses of Trenton, N. J., and Herbert H. Greenfield of Bridgeport, Conn.

Okla., Ada.—City voted to grant franchise to Maethwaite Oil & Gas Co. to supply natural gas. (Lately noted.)

Okla., Bartlesville.—Producers' Petroleum

stock \$5000, inceptd. by J. W. Bozarth, W. V. Lane and L. M. Lane.

Okla., Yahola.—Yahola Pipe Line Co., capital stock \$50,000, inceptd. by J. H. Evans, W. H. Albro and Randolph Shirk, all of Tulsa.

Tex., Athens.—Athens Oil & Gas Co. organized to drill for oil; let contracts to bore 3 wells.

Tex., Fort Worth.—Gas Pipe Lines.—Lone Star Gas Co. increased capital stock from \$3,500,000 to \$4,500,000; pipes gas from Henrietta field to Fort Worth and Dallas; will install large gas compressor in Henrietta field, make several extensions and undertake general improvements.

Tex., Houston.—Bossier-Caddo Oil Co., capital stock \$3500, inceptd. by Sam T. Robb, L. M. McMeans and C. G. Ballentine.

Tex., Mansfield.—Stine Oil & Gas Co., capital stock \$25,000, inceptd. by Fitch Stine, J. H. Stine and J. N. Beard.

Va., Richmond.—Harris County Oil Corp., capital \$120,000, chartered; Ernest B. Filpen, Pres.; Andrew D. Christian, Secy.-Treas.

## ICE AND COLD-STORAGE PLANTS

Ark., Harrison.—Harrison Electric Light & Ice Co. changed name to Harrison Gas & Electric Co. and increased capital stock from \$45,000 to \$100,000.

Fla., Detroit.—Company organized with \$25,000 capital stock by M. G. Tracey of Miami, J. M. Powers of Detroit and others; will establish ice plant, etc. (See Electric Plants.)

Ky., Olive Hill.—Tygart Electric Co. will be inceptd., capital stock \$8000 (J. A. Maddox and others interested) to establish ice plant and electric-light system. (See Electric Plants and Machinery Wanted.)

Ky., Shepherdsville.—Shepherdsville Electric Light, Ice & Water Co., capital \$10,000, inceptd. by S. W. Bates and others. (See Electric Plants.)

Mo., Salisbury.—Salisbury Sanitary Ice Supply Co. (lately noted inceptd., \$12,000 capital stock) organized; Henry Jacobs, Pres.; T. H. Edwards, V.-P.; let contract Henry Gooch, Salisbury, to erect 40x80-ft. \$2500 brick building with wood trimmings; machinery contract let.

W. Va., Ronceverte.—Ronceverte Ice & Cold Storage Co. (lately noted inceptd., capital stock \$50,000) organized; A. E. Johnson, Pres., Fort Spring; W. E. Deegans, V.-P., Mt. Hope; purchased plant of Greenbrier Valley Cold Storage Co.

## IRON AND STEEL PLANTS

Ala., Birmingham.—Steel Plant, etc.—Tennessee Coal, Iron & R. R. Co. will make additions and improvements, beginning work at once, as follows: Install 16-in. gas main, costing about \$30,000, at No. 2 open-hearth department, thus providing substitution of by-product coke-oven gas (from Fairfield ovens) for coal-producer gas now used; divert gas from boilers to open-hearth department, as result of experiments; improve 8-in. guide mill at Bessemer rolling mill at cost of about \$55,000; install hot beds, continuous heating furnace, etc.; install electric motor in place of steam engines driving rolls on this mill; obtain electricity from Alabama Power Co.

W. Va., Wheeling.—Iron Furnaces and Steel Plant.—Wheeling Steel & Iron Co. increased capital stock by \$2,500,000 to acquire Wheeling Sheet & Tin Plate Co.'s plant at Yorkville, O., and make extensive improvements to Benwood and Wheeling plants; plans to double output of Benwood steel plant; install several bar mills to roll sheet bars for Yorkville plant, increase tin plate capacity at Yorkville, increase output at Wheeling, etc.; present capital stock is \$5,000,000.

## LAND DEVELOPMENTS

Ala., Mobile.—South Investment & Development Co., H. S. Hover, Pres.-Treas., Bienville Hotel Bldg. (lately noted inceptd., capital \$5000), will develop about 2000 acres near Mobile; orange, pecan and grapefruit orchards.

Ala., Mobile.—St. Louis-Alabama Land Co., Room 4 People's Bank Bldg., inceptd. with \$30,000 capital stock by C. W. Dodson and G. R. Ellison of Mobile and O. B. Bottorff of St. Louis, Mo.; will develop property in western portion of Mobile county.

Ky., Orangeburg, R. F. D. from Maysville, Orangeburg Improvement Co., capital \$6000, inceptd. by L. Collis, R. C. Bullock and D. Campbell.

Mo., Kansas City.—Kiger Farms Co., capital stock \$15,000, inceptd. by C. A. and Eugene A. Kiger and John L. George.



Mo., Kansas City.—Peace Harbor Development Co., capital stock \$30,000, inceptd. by R. S. Stone, S. P. Hartman and Geo. D. Jones.

N. C., Harnett.—L. W. Moore of Wilmington and O. T. Wallace of Birmingham, Ala., purchased 110 acres land in Harnett township and plan to develop as subdivision; propose to divide into sites of 2½ acres and larger.

N. C., Black Mountain.—Episcopal Church Retreat, Bishop J. M. Horner, Prest., Asheville, N. C., will develop 213 acres 3 mi. northwest of Black Mountain; plans include surveying tract and dividing into building sites, constructing roads and sidewalks, laying water and sewer pipes, providing electric lighting system, building hotel and auditorium, etc.; contemplates expenditure from \$350,000 to \$400,000. (Lately noted.)

N. C., Southport.—Palmetto Island Co., authorized capital \$1,000,000, inceptd. by W. H. Pike of Southport, F. T. Boyd and E. A. Lackey of Hamlet and others; plans developments for seaside resort.

S. C., Columbia.—Edgewood Development Co. inceptd. by R. B. Waites, E. L. Allison and W. H. Sims.

S. C., Florence.—Board of Park Comms. will develop 30-acre park; to engage landscape architect. (See Machinery Wanted.)

S. C., Sumter.—Hampton Avenue Development Co. (lately noted inceptd., capital \$10,000, by R. B. Beiser and others) will develop land on Hampton Ave.; 280 ft. frontage on north and 120 ft. on south side; improvements include widening and paving street, and one block cement sidewalks.

Tenn., Bristol.—Interstate Land Corp., A. L. Osborne, Prest. (lately noted inceptd., capital \$25,000), continues Interstate Land Co.; has been negotiating sales in East Tennessee, Virginia, etc.; contemplates extending operations to other agricultural sections.

Tex., Austin.—J. P. Lightfoot is reported to organize syndicate to develop property at Bull Creek for summer and winter resort, expending about \$250,000; construct dam across Bull Creek, forming lake for swimming, boating and fishing; also erect \$100,000 hotel, with dancing pavilion and theater.

Tex., Lytton Springs.—Lytton Springs Townsite Co., capital stock \$100, inceptd. by J. G. Burney, H. W. Perry and R. J. C. Robertson.

Tex., Trinity.—Jackson-Vreeland Co., Kansas City, Mo., purchased 1,000,000 acres located on both sides Trinity River in Trinity, Walker and Houston counties, Trinity Valley, on International & Great Northern Ry.; plans contemplate dividing into farms, arranging for complete colonization and establishing main offices at Trinity.

## LUMBER MANUFACTURING

Ala., Mobile.—A. J. Spencer Lumber Co. is having plans prepared by Clark Bros., Indianapolis, Ind., for sawmill on Three Mile Creek to replace burned plant; daily capacity, 50,000 ft.; cost \$25,000. (Lately noted.)

Ala., Winfield.—Columbus Lumber Co., D. F. McCullough, Mgr., Columbus, Miss., purchased 15,212 acres timber adjacent to other holdings in Lamar, Fayette and Pickens counties, Ala.; no changes in plant necessitated. (Lately noted.)

Ark., Arkadelphia.—Doston Lumber Co. will build planing mill.

Ark., Wilton.—Spence-McBride Lumber Co. purchased property of old Hedgecock Lumber Co. and contemplates establishing 1 to 3 other mills and planing mill, mfrs. both hardwood and pine lumber.

Fla., Cottondale.—Cottondale Lumber Co., capital stock \$30,000, inceptd. by Arthur Williams and others.

Fla., Palatka.—Mattox Commercial Co. will operate sawmill lately noted purchased by P. L. Sutherland, Prest.; G. Mattox, V.-P.; R. R. Price, Treas.; C. E. Melton, Mgr.; mfrs. yellow pine, about 40,000 ft. daily.

Ga., Letford.—W. G. Tuten will rebuild sawmill reported burned at loss \$25,000.

Ky., Lexington.—Commonwealth Coal & Timber Co. inceptd. by Sam M. Wilson and others to develop timber and coal lands. (See Coal Mines and Coke Ovens.)

La., Morgan City.—Chapman-Storm Lumber Co. purchased 12,000,000 ft. cypress timber in Bossier Park and will erect shingle mill.

Mo., University City.—Beckers-Behrens-Gist Lumber Co., capital stock \$30,000, inceptd. by Alex. B. Beckers, Chas. C. Behrens and Thos. B. Gist.

North Carolina.—Haywood Land & Lumber Co., C. Boice, Prest., Richmond, Va., purchased 25,000 acres hardwood timber in North Carolina; contemplates no operations at present; organization of company not complete. (Lately noted inceptd. with \$50,000 capital under Va., Richmond.)

Tenn., Kingsport.—Kingsport Lumber Co., capital \$500, inceptd. by S. G. Edmondson, S. W. Wilkerson and M. V. Wilkerson.

Tex., Canutillo.—Hines-Worden Lumber Co., El Paso, Tex., organized; R. E. Hines, Prest.; G. F. Worden, V.-P. and Mgr.; Chas. Loomis, Secy.; erect lumber sheds, 56x62 ft.; mill construction. (Lately noted inceptd., \$2000 capital.)

W. Va., Parkersburg.—Southern Lumber Co. purchased plant formerly owned by Parkersburg Mantel & Tile Co.; remodeling plant and will install machinery to mfr. hardwoods.

## METAL-WORKING PLANTS

Ky., Covington.—Signs.—Donaldson Sign Co., Newport, Ky., is reported to build plant; install metal-working and other equipment; B. Wisenall is architect for building.

## MINING

La., Abbeville.—Sulphur.—Vermillion Petroleum Co. plans to drill for sulphur. (See Gas and Oil Developments.)

Md., Frederick.—Copper.—United Milling & Smelting Copper Co. increased capital stock \$50,000; will develop New London mine and Dolly Hide mine near Libertytown.

Tenn., Chattanooga.—Sand.—Bible Sand Co., capital stock \$50,000, inceptd. by Jas. F. Johnson, J. D. Carlin, Jas. M. Adams and others.

Tenn., Ducktown.—Copper.—Tennessee Copper Co., 2 Rector St., New York, has awarded practically all contracts for additional construction, new additional machinery, etc., for McPherson and Burra improvements; now placing equipment preparatory to erecting breaker or shaft house and power plant at McPherson mine; foundations to be of concrete and superstructure of steel; this plant to have electric power and daily capacity 1000 tons ore; will undertake Burra enlargement after completion of McPherson work; rumors state all to cost about \$1,000,000. (Lately noted.)

Tenn., Nashville.—Iron.—Holly Iron Co., capital stock \$30,000, inceptd. by Grover P. Powell, Andrew Powell, Geo. Powell and others.

## MISCELLANEOUS CONSTRUCTION

Ala., Tuscaloosa.—Wharf.—City contemplates constructing wharf on Warrior River. Address City Com.

Ark., Judsonia.—Levee.—Little Red River Levee Dist. No. 2 will construct about 300,000 cu. yds. levee embankment; length 11 mi., of which 9½ mi. is through open cultivated land; height 4 to 9 ft.; C. F. Long, Secy. Comms. (See Machinery Wanted.)

Fla., Miami.—Docks and Harbor.—City contemplates engaging engineer to prepare plans and specifications for docks and harbor; J. W. Watson, Mayor.

Fla., Tampa.—Phosphate Pier, Terminal, etc.—Export Phosphate Ry. & Terminal Co. inceptd. with \$50,000 capital stock and privilege of increasing to \$2,000,000; E. L. Blood, Prest.; H. E. Capowell, V.-P.; E. Albert Pierce, Secy.-Treas.; all of Export Phosphate Co., Mulberry, Fla.; proposes to construct phosphate terminal facilities on Tampa estuary; plans include 1000-ft. pier for future extension to 1500 ft. and railway from phosphate mines to terminal, reported to cost \$200,000; phosphate drying and handling equipment reported to cost \$300,000, etc.; has options on terminal locations; surveying for railway; Engrs., G. D. & H. D. Mendenhall, 737 W. Monroe St., Jacksonville; B. M. Sullivan, Tampa, Asso. Engr. on estuary portion of plans.

Fla., Winter Haven.—Boat Canal.—A. C. Nydigger has completed profile of boat canal from Lake Winterset to Lake Hamilton, connecting about 25 lakes; cost of canal and short laterals about \$10,000.

Ga., Augusta.—Wharf.—City let contracts aggregating \$38,000 to construct wharf; Simons-Mayrant Co., Charleston, S. C., at \$873, pile foundation; McKenzie Construction Co., Augusta, at \$930, concrete floor; W. F. Bowe, Augusta, at \$10,840, steel shed 60x200 ft.; also let smaller contracts for electric wiring, plumbing, erection of hoist, etc.; Nisbet Wingfield, City Engr. (Call for bids lately noted.)

La., Baton Rouge.—Wharf, etc.—Standard Oil Co. of Louisiana let contract (as lately reported) to Doullut & Williams, New Orleans office at 1029 Maison Blanche Bldg., to construct 500-ft. wharf, with approach, etc.;

Engr., W. A. Gotschall, care Standard Oil Co. of Louisiana; work is extension to 1500-ft. wharf previously contracted.

La., New Orleans.—Wharf.—Navy Dept., Bureau Yards and Docks, H. R. Stanford, Chief, Washington, D. C., opens bids July 18 to construct wharf at naval station; specification No. 2082.

La., Lake Providence.—Levee Enlargement. Government let contract to Helgason Bros., Vicksburg, Miss., for 900,000 cu. yds. levee enlargement in Bunches Bend, north of Lake Providence; 20 cents per yd., making contract \$180,000; will raise levee to river commission revised grade, distance about 5 mi.

La., St. Francisville.—Levees.—City will construct 2 protection levees and reinforced concrete reservoir; bids until July 13; G. L. Plettinger, Clerk; V. E. Smith, Engr., Franklin, La. (See Machinery Wanted.)

Md., Baltimore.—Coal Pier.—Baltimore & Ohio R. R. Co., F. L. Stuart, Ch. Engr., has not completed plans for constructing additional coal pier at Curtis Bay; report in March stated pier cost to be probably \$1,000,000, and construction to depend on deepening of Curtis Bay channel to 35 ft.; present pier handle 3,000,000 tons coal annually.

Miss., Biloxi.—Bulkhead and Park.—City is considering construction of bulkhead and park along West Beach; conferring with Kerr Construction Co. of New Orleans, La.

Tex., Caldwell.—Levee.—Burleson County Comms. ordered election Aug. 3 to vote on issuing \$136,405 bonds to repair, alter and improve Brazos River levee, protecting 50,000 acres.

## MISCELLANEOUS ENTERPRISES

Ala., Marion.—Co-operative Exchange.—R. W. Minor, Box 301, is interested in proposed organization by farmers of the section of co-operative exchange with view to centralizing products for shipment; in connection, asks correspondence with manufacturers of canning, ice and cold-storage and other machinery. (See Machinery Wanted.)

Ala., Prattville.—Grain Elevator.—McQueen, Smith & Sons will erect grain elevator.

Fla., Detroit.—Laundry.—Company organized with \$25,000 capital stock by M. G. Tracey of Miami, J. M. Powers of Detroit and others; will establish steam laundry, etc. (See Electric Plants.)

Fla., Plant City.—Publishing.—East Hillsborough Publishing Co., capital \$4000, inceptd.; L. I. Bird, Prest.; J. W. Hobbs, V.-P.; G. R. Garner, Treas.; J. Fred DeBerry, Secy. and Gen. Mgr.

Fla., Stuart.—Marine Ways, Supplies, etc.—Fredericksen & Tyndall Supply Co. (W. L. Fredericksen and T. Tyndall) will establish marine ways and shop, and deal in supplies; erect \$3000 sheet-metal building.

Ga., Savannah.—Shipping.—Strachan Shipping Co., capital \$500,000, inceptd. by F. D. M. Strachan, Geo. F. Armstrong, H. G. Strachan and others.

Ky., Lexington.—Florists.—John A. Kellar Co., capital stock \$2500, inceptd. by J. F. Kellar and others.

Ky., Owensboro.—Contracting.—Owensboro Ditcher & Grade Co., capital \$50,000, inceptd. by W. A. Steele, R. S. Hughes, C. A. Rogers, S. R. Ewing, Lee D. Ray and Harry Ray.

Ky., Owensboro.—Dairy.—Owensboro Sanitary Milk Co., capital \$2500, inceptd. by D. M. Weatherholt, A. L. Weatherholt and Otis Hayden.

Ky., Pikeville.—Hardware.—Pauley-Ratliff Hardware Co., capital \$5000, inceptd. by J. E. Ratliff, Emma L. Ratliff and H. Pauley.

Miss., Rodney.—Laundry.—Alcorn Agricultural and Mechanical College, Jas. McClure, Secy.-Treas., Fayette, Miss., is reported contemplating installation of steam laundry to replace burned plant.

Mo., Drake.—Sand Elevator.—Union Sand & Material Co. will rebuild sand elevator burned at loss of about \$25,000.

Mo., St. Louis.—Mushroom Culture.—The Mushroom Cellars (organized by Alfred L. Kammerer, Benj. M. Duggar and Herman von Schrenck) leased old Liberty Brewery property at Parnell and Dodder Sts. and will expend about \$6000 in remodeling for mushroom culture; plant consists of 3-story buildings and 3 caves, one of which is 125x20 ft.; planned to convert caves and 2 floors of buildings into mushroom gardens; second floors to be heated.

Miss., Georgetown.—Live Stock.—Georgetown Live Stock Co., capital stock \$10,000, inceptd. by I. C. and J. L. Enochs and E. G. Flowers of Jackson, Miss.

Mo., St. Louis.—Laundry.—Compton Heights

Laundry Co., capital stock \$35,000, inceptd. by John F. and Louis M. Winter, Otto Denter and Jos. Barthelmann.

N. C., Greensboro.—Incinerator.—City will install incinerator; let contract Nye Odorless Crematory Co., Macon, Ga.

N. C., Lenoir.—Laundry.—Lenoir Coal & Ice Co., P. A. Reavis, Mgr., is interested in proposed establishment of laundry; population 4000. (See Machinery Wanted.)

N. C., Statesville.—Dairy.—Fred H. Conger purchased 112 acres land and will establish dairy; sow grass, erect barn, etc.

S. C., Bennettsville.—Laundry.—Bennettsville Steam Laundry Co., capital \$2000, inceptd. by A. T. Nuttall and D. D. McCall.

Tex., Bryan.—Publishing.—Southern Farm & Dairy Publishing Co. organized; C. M. Evans, Prest.-Mgr.; M. E. Wallace, V.-P.; S. Farrell, Secy.-Treas.; publish semi-monthly magazine; at present erect no buildings nor install machinery. (Lately noted inceptd., \$5000 capital.)

Tex., Clarksville.—Laundry.—Clarksville Steam Laundry Co. (lately noted inceptd., \$5000 capital stock) organized; Dero Austin, Prest.; P. J. Graves, V.-P.; J. F. Kunkle, Secy.-Treas.; Newman King, Mgr.; operate established plant.

Tex., Dallas.—Construction.—Newcomb-Bell Construction Co., capital stock \$5000, inceptd. by John W. Bell, Robt. C. Newcomb and John C. Anderson.

Va., Richmond.—Blueprinting, etc.—Childrey Co., 1108 Virginia Ry. & Power Bldg., will install blueprint paper-coating machinery, printing and drying equipment, etc., for producing blueprint paper, blueprints, drawings, etc.; hourly capacity from 1800 to 2000 sq. ft.; M. A. Childrey, Prest.-Mgr. (Lately noted inceptd. with \$10,000 capital.)

W. Va., Williamson.—Incinerator.—City voted \$150,000 bonds for incinerator, sewers, paving and school building. Address The Mayor.

## MISCELLANEOUS FACTORIES

Ala., Birmingham.—Films.—Great Southern Film Mfg. Co., capital stock \$1,000,000, incorporated; A. Alex. Wall, Prest.; Dr. R. Strickland, V.-P.; C. H. Glasser, Secy.-Treas.; to erect moving picture manufacturing plant on Shades Mountain; offices 746 Brown-Marx Bldg.

Ala., Mobile.—Bottling.—Mo-Cola Co., capital stock \$100,000, inceptd.; T. F. Murphy, Prest.; A. M. Graham, V.-P.; J. L. Shipp, Secy.-Treas.

D. C., Washington.—Novelties.—General Novelty Mfg. Co., capital stock \$6000, inceptd. by Stanley W. Finch, Chas. F. Carual, Geo. Topham and others; offices, 1341 W St. N. W.

Fla., Jacksonville.—Tires.—Florida Tire Co., Geo. M. Adams, Prest., contemplates erecting building; plans not definite. (Lately noted inceptd., \$25,000 capital.)

Fla., Meredith.—Naval Stores.—J. L. Medlin will rebuild naval stores plant; erect two 25-bbl. stills; cost \$4000; no machinery; daily capacity, 10 bbls. turpentine and 30 bbls. rosin. (Lately reported burned at Fla., Bronson.)

Fla., Starke.—Cigars.—Starke Cigar Co. will erect 2-story factory at foot of South St.; monthly output 25,000 cigars until Oct. 1; after that, 100,000 cigars.

Ga., Augusta.—Rubber Tires.—Southern Tire & Rubber Co., Wena A. Smith, Prest., let contract to E. H. Mobley, Irish-American Bank Bldg., to erect plant to mfr. tires, etc.; one story; 65x200 ft.; brick; mill construction; cost about \$9000.

Ga., Augusta.—Well Cleaner.—World Wonder Well Cleaner Corp., capital stock \$25,000, chartered by J. E. Fowler of Augusta, S. M. McNair, J. A. Hadden and E. S. Fuller of Wrens, Ga., and others.

Ky., Butler.—Creamery.—Butler Creamery Co. is being organized; install refrigerating and other equipment.

Ky., Greenville.—Tobacco.—S. E. Rice is reported to rebuild tobacco factory lately noted burned at loss of \$35,000.

Ky., Louisville.—Gas Appliances.—United Gas Appliance Co., capital stock \$30,000, inceptd. by B. E. Cook, H. J. Lyons and F. F. Sherman.

Ky., Louisville.—Washing Machines.—Quinn Mfg. Co., capital stock \$50,000, inceptd. by H. J. Graham, B. H. Wilson, Virgil Topham and Lucas Moore.

Ky., Louisville.—Brewery.—Christ Brewing Co., capital \$35,000, inceptd. by John M. Christ, John B. Rapier and Fred J. Hinkelstein.

Ky., Louisville.—Puritan Mfg. Co., capital \$25,000, inceptd. by Otis W. Pickrell, Edward J. Zinsmeister and Theodore W. Powell, Jr.

Md., Baltimore.—Clothing.—United States Woolen Mills Co., 227 W. Fayette St., plans

to erect clothing factory building, 77,000 sq. ft. floor space, costing about \$150,000; brick and reinforced concrete construction; architect not selected.

Miss., Rodney—Shoes.—Alcorn Agricultural and Mechanical College, Jas. McClure, Secy.-Treas., Fayette, Miss., is reported as contemplating installation of machinery in shoe manufacturing department.

Mo., Kansas City—Sanitary Wipers.—Kansas City Sanitary Wipers Co., capital stock \$200,000, inceptd. by Herman Sonken, A. E. Calamba and Eugene Batavia.

Mo., St. Louis—Pulleys and Stakes.—Pull-U-Out Mfg. Co., capital stock \$100,000, incorporated by Ross S. Houck, F. P. Cornish, T. A. Medlen and others.

Mo., St. Louis—Tailoring.—H. A. Schmidt Tailoring & Mfg. Co., capital stock \$20,000, inceptd. by Henry A. Schmidt, Bertha E. Schmidt and Henry A. Schmidt, Jr.

Mo., St. Louis—Oil Burners.—Economy Oil Burner Co., capital stock \$25,000, inceptd. by Andrew J. Kessinger, Alfred N. Morton and John C. Wasson.

Mo., St. Louis—Macaroni.—American Macaroni Co., capital stock \$20,000, inceptd. by Ward Goodlee, Jos. Freschi and John Ravarino.

Mo., St. Louis—Tar Products.—American Tar Products Co., capital stock \$10,000, incorporated by Jos. C. Cannon, Forest P. Tralles, Erwin C. Wolfe and others.

N. C., Oriental—Pine Tar, etc.—Oriental Pine Tar & Oil Co. will rebuild plant recently burned.

Tenn., Chattanooga—Chemicals and Drugs. National Mfg. Co., capital stock \$10,000, incorporated by J. D. Carlin, Jas. M. Adams, J. H. McCallum and others.

Tenn., Chattanooga—National Mfg. Co., capital stock \$10,000, inceptd. by J. D. Carlin, James M. Adams, J. H. McCallum and others.

Tenn., Knoxville—Heating Specialties.—The Fulton Co. will erect 3 buildings for plant at Cumberland Ave. and Third Creek; brick and concrete; 1 story; 50x105 ft., 56x175 ft. and 50x125 ft.; steel roofs; cost \$12,000; machinery purchased; mfr. brass and iron heating specialties. (Lately noted.)

Tenn., Memphis—Carbon Remover.—Diamond Carbon Remover Co., capital \$50,000, inceptd. by J. M. Biggs, M. L. Moore, F. D. Hawkey, W. P. Moore and D. M. Halpin.

Tex., Fort Worth—Extracts.—Parker-Browne Co. is repairing damage to plant caused by lately-noted fire.

Va., Big Island—Pulp and Paper.—Bedford Pulp & Paper Co., Raymond I. Straus, Secy., Richmond, Va., having plans and specifications prepared to rebuild burned pulp and paper mill; daily capacity to be 55 tons; cost estimated at exceeding \$400,000, including machinery and water-power improvements; buildings alone to cost about \$120,000; Engr., H. S. Ferguson, 200 Fifth Ave., New York. (Lately noted.)

Va., Crewe—Cheese.—Haytekh Cheese Factory, capital stock \$10,000, inceptd.; A. E. Neville, Pres.; S. J. Beatty, V.-P.; Geo. P. Guenther, Secy.

Va., City Point—Explosives.—E. I. du Pont de Nemours Powder Co., Wilmington, Del., completed plant known as Hopewell works; for mfg. high explosives; includes 1683 acres, 80 plant buildings, 23 dwellings, etc.; plant designed and built by company; machinery for mfg. designed and built in company's shop. (Previously noted.)

Va., Lynchburg—Empire Trading & Mfg. Co., capital \$15,000, inceptd.; W. R. Winfree, Pres.; W. H. Steptoe, Secy.

Va., Nickelsville—Needle Threader.—M. L. Moore will mfr. by contract patented sewing machine needle threader. (See Machinery Wanted.)

Va., Petersburg—Peanuts.—Colonial Peanut Corp., capital stock \$20,000, inceptd.; remodel and equip building on East Bollingbrook St.; Thos. B. Scott, Pres.; Geo. Cole Scott, V.-P., both of Richmond; Franklin W. Smith, Secy.-Treas., Petersburg.

Va., Roanoke—Distillery.—Roanoke Distilling Co., capital \$25,000, inceptd.; B. W. Jones, Pres.; G. R. Garrett, Secy.-Treas., both of Chatham, Va.

W. Va., Mason City—Salt.—Ohio River Salt Co. will rebuild salt plant; use about 500,000 ft. lumber; boilers, compressors, line shafting, etc., have been ordered; report states expenditure will be \$75,000 to \$100,000.

W. Va., Parkersburg—Remedies.—Dr. Harper Remedy Co., capital \$12,000, inceptd. by E. B. and E. M. Harper, T. G. Scherr, C. W. Stuart and G. W. Abels, all of Parkersburg, and others.

## MOTORS AND GARAGES

Ark., Morrillton—Garage.—C. E. Cruce let contract J. Patton & Co., Morrillton, to build lately-noted one-story 30x60-ft. garage.

D. C., Washington—Garage, etc.—W. M. Griffiths let contract to erect garage and warehouse to cost \$10,500; lately noted. (See Warehouses.)

Ga., Savannah—Automobiles.—Atlantic Motors Co. inceptd. by R. H. Richards, A. G. Benfield and John E. Finney.

Ky., Covington—Motor Trucks.—United States Motor Truck Co., capital \$25,000, inceptd. by R. C. Stewart, B. Bramlage and M. H. McLean.

La., Alexandria—Automobiles.—Palace Automobile Co., capital stock \$15,000, inceptd.; Milton S. Fairfax, Pres.; John S. Goodrich, Secy.-Treas.

La., New Orleans—Automobile Plant.—Southern Automobile Mfg. & Supply Co. is title of \$1,000,000 stock company organized to build motor runabouts, freight trucks, limousines, gasoline engines, etc.; proposes constructing 2-story iron building, fireproof, 300 ft. sq., costing about \$300,000, and installing machinery costing about \$400,000; J. Bart Davis, Pres.; offices, 410 Wells Fargo Bldg. (Lately noted.)

Mo., St. Louis—Repair Shop.—Holbrook-Blackwelder Real Estate Co. arranged to erect building on Delmar Blvd.; 190x50 ft.; West End Auto Repair Co., Wm. H. Clise, Pres., 5883 Delmar Blvd., leased structure and will occupy as automobile repair shop.

Tenn., Nashville—Garage.—Eighth Ave. Realty Co. will erect garage for Nashville Motor Co.; structure 50x100 ft.; 1 story in front and 2 in rear; cost \$32,000; Archt., C. A. Ferguson.

Tex., Dallas—Garage.—S. E. Milliken will erect garage; 1 story; brick; cost \$20,000; Contr., Hedrick Construction Co.

## RAILWAY SHOPS, TERMINALS, ROUNDHOUSES, ETC.

S. C., Columbia—Southern Ry. Co., B. Herman, Ch. Engr., Washington, D. C., is reported to have purchased 300 acres near Roysters, about 3 mi. from Columbia, and will increase yard capacity, erect construction and repair shops.

## ROAD AND STREET WORK

Ala., Birmingham—City will grade, macadamize, curb, gutter and construct sidewalk pavement on Pike Ave. from Byrne St. to railroad; cost \$5000; also 32d St. to 29th St.; cost \$4500; Julian Kendrick, City Engr.; bids until July 14. (See Machinery Wanted.)

Ala., Mobile.—City let contract F. G. Proudfoot, 127 N. Dearborn St., Chicago, Ill., at \$34,844 for asphalt paving.

Ala., Mobile.—Revenue and Road Comms. let contract E. S. Litch at \$9008.75 to improve Spring Hill Ave.

Ala., Seale.—Russell County Comms. receive bids until Aug 3 for grading, draining and sand-claying about 9 mi. of Enfaula and Columbus Rds., beginning at Fort Mitchell; W. S. Keller, State Highway Engr., Montgomery, Ala. (See Machinery Wanted.)

Fla., Clearwater.—City contemplates voting in October on street and sewer improvement bonds; J. R. Jeffords, Mayor.

Fla., Jacksonville.—Duval County Comms. rescinded action and reduced amount of bond issue (lately noted) from \$2,000,000 to \$1,000,000, of which \$500,000 is to be expended to pave, macadamize or otherwise improve roads; \$250,000 to build 11 reinforced concrete highway bridges, and \$250,000 to refund indebtedness.

Ky., Bellevue.—City contemplates macadamizing streets; City Engr. Herman submitted following estimates: Hauserek Ave., \$8416; Washington Ave., \$2433; Locust St., \$1120; Krogman Al., \$1949.

Ky., Carlisle.—Nicholas county has \$10,000 available to construct macadam road from Carlisle to Bath county line; Jos. H. Berry, Engr., Carlisle; no bids. (Lately noted.)

Ky., Lexington.—City let contract Carey-Reed Co., Lexington, to asphalt Rose Lane, E. 2d St., W. 2d St., N. Ashland Ave. and other streets; J. White Guyn, City Engr. (Call for bids lately noted.)

Ky., Waterford.—Whitefield-Plumb Creek Turnpike Co., capital \$1000, inceptd. by J. T. Carlin, F. T. Wells, Board Bros. and Frank Shark.

La., New Orleans.—City will construct sub-surface drains, culverts, curbs, gutter bottoms, sidewalks and street paving on Louisiana Ave. (Saratoga St. to S. Claiborne Ave. and Water to Saratoga St.) and Coliseum

St. (Louisiana Ave. to Aline St.); Louisiana St. paving to be Pitch Lake asphalt and creosoted wood block; Coliseum St. paving, Pitch Lake asphalt; bids until July 13; A. G. Ricks, Commr. (See Machinery Wanted.)

Md., Baltimore.—City receives bids until July 15 for granite block paving on Falls-way; third section; Madison to Chase Sts.; H. K. McCay, City Engr. (See Machinery Wanted.)

Md., Baltimore.—City will grade, curb and pave with sheet asphalt 37th St. from Charles St. to University Parkway; about 1100 sq. yds.; contract No. 135; Eugene E. Grannan, Pres. Commrs. for Opening Streets. (See Machinery Wanted.)

Miss., Forest.—Beat 2 of Scott County voted bonds to construct roads. Address County Comms.

Mo., Webster Groves.—City let contract Foxhall P. McCormick at \$5000 to improve Greeley Ave.

N. C., Durham.—City will grade Alston Ave.; 13,500 cu. yds. excavation, 6330 lin. ft. concrete curb and gutter and 3665 ft. sewerage; bids until July 16; W. G. Bradshaw, Chrmn. Street Comm. (See Machinery Wanted.)

N. C., Franklin.—Franklin township, Macon county, will grade about 10 mi. public highway and construct 8000 sq. yds. bituminous macadam paving; about 2500 ft. concrete curb and brick gutter, concrete culverts and bridges, and lay terra-cotta drain pipe; bids on and after July 10 by Highway Com., E. H. Franks, Pres. (See Machinery Wanted.)

N. C., Newton.—City is considering \$5000 bond issue to pave and improve streets; G. A. Warlick, Mayor.

N. C., Raleigh.—City let contract R. G. Lassiter at \$847.50 to place about 10,000 lin. ft. concrete curb and gutter combined; Jas. I. Johnson, Mayor. (Call for bids lately noted.)

Okla., Howe.—City, A. McDonald, Mayor, voted previously-noted \$15,000 bonds for road construction.

Okla., Muskogee.—City will grade and gravel roads during next year; probably day labor. Address The Mayor. (City Council lately noted as appropriating \$10,000 to improve roads and \$2000 to improve boulevard.)

Okla., Poteau.—Poteau and Howe townships of LeFlore county voted \$21,000 and \$16,000 bonds, respectively, for road construction; city of Poteau voted \$10,000 for bonuses to encourage road building; Wister, Shady Point, Kully Chaha and Cameron townships defeated bonds, \$35,000, \$21,000, \$15,000 and \$18,000, respectively. Address County Comms. (Lately noted.)

Tenn., Lexington.—Henderson county votes in Aug. on \$150,000 bonds to construct roads. Address County Comms.

Tenn., Nashville.—City will construct concrete curbing and sidewalks on Gilmore and 12th Aves. and Woodland St.; bids until July 7; H. E. Howse, Mayor.

Tenn., Ripley.—City, A. I. Dorsey, Mayor, votes July 14 on \$15,000 bonds; \$10,000 to be expended for sidewalks and \$5000 for streets. (Lately noted as Lauderdale county.)

Tenn., Pulaski.—City will grade and rebuild Public Square and connecting streets; engaged Jas. Morton, Engr., Birmingham, Ala., to make surveys.

Tex., Bastrop.—Bastrop county voted \$50,000 bonds to complete system of road and construct concrete low-water bridge across Colorado River at Nash's Ferry. Address County Comms. (Lately noted.)

Tex., Floresville.—Road Dist. No. 1 of Wilson County voted \$60,000 bonds to construct roads. Address County Comms. (Lately noted.)

Tex., Houston.—City let contract Horton & Horton at \$3750 to pave Smith St. from Walker to Capitol; E. E. Sands, City Engr.

Tex., Houston.—Harris County Comms. instructed County Engrs. to prepare plans and specifications for improving old West Montgomery Rd. from 29th Ave. to Yale St. and for paving Larkin St.; let following contracts: Henderson & Mullen at \$6458, Westfield and Clark-St. Rd. with shell; W. L. Joyner at \$2885, Pasadena culverts; Jas. Sullivan at \$1415, Massey and Thompkins Rd.; Davis & Hughes at \$12,750, five mi. Lynchburg and Cedar Bayou Rd. with shell.

Tex., Houston Heights.—City considering \$100,000 bond issue to improve streets; proposes to expend about \$80,000 to gravel about 29 mi. of streets and \$20,000 to improve storm drainage, establishing surface gutters at street intersections so as to facilitate passage of storm waters into White Oak Bayou; Robt. Cole, City Engr.

Tex., Junction.—Kimble county contemplates construction of roads and bridges;

circulating petition for bond election. Address County Comms.

Tex., Kaufman.—City will construct permanent pavement on Courthouse Square; 7550 sq. yds. pavement and 2050 lin. ft. combined curb and gutter; bids until July 10; W. E. Pickard, Mayor. (See Machinery Wanted.)

Tex., San Antonio.—City let contract S. E. Finley at about \$17,000 to pave 12 mi. in South Loop with tarvia; width, 15 ft.

Tex., Terrell.—City will pave Rockwall Ave. from Griffith to Moore Ave. Address The Mayor.

Tex., Wharton.—Wharton County Road Dist. No. 1 will construct 60 mi. hard-surface roads, including grading, outfall drainage ditches and placing of surface material; bids until July 14; P. G. Brooks, County Clerk; Engr., Norris Engineering Co., Wharton. (See Machinery Wanted.)

Tex., Yoakum.—City, Dan T. Price, Mayor, will open bids July 14 to construct about 7500 sq. yds. paving street improvements in business district; lately noted; cost about \$50,000. (See Machinery Wanted.)

Va., Norfolk.—City contemplates expending \$50,000 for street and other improvements; W. T. Brooke, City Engr.

W. Va., Williamson.—City voted \$150,000 bonds for paving, etc. Address The Mayor. (See Miscellaneous Enterprises.)

## SEWER CONSTRUCTION

Ala., Birmingham.—City will construct sanitary sewers in eastern part of city and at Owenton; cost \$23,000; bids until July 7; Julian Kendrick, City Engr. (See Machinery Wanted.)

Ala., Birmingham.—City will construct sanitary sewers near 23d Ave. and 19th St., Ensley Division; cost \$4000; bids until July 14; Julian Kendrick, City Engr. (See Machinery Wanted.)

Ala., Birmingham.—City let contract to Jordan & Phillips to construct sanitary sewers in Annelsburg district and in vicinity of 15th Ave. and Cleveland St.; estimated cost \$2300; work includes 3200 lin. ft. 8-in. pipe, 4 to 12 ft. deep; 1200 lin. ft. 8-in. pipe, 4 to 8 ft. deep; 15 manholes and 180 Ys; Julian Kendrick, City Engr. (Lately noted.)

Ala., Collinsville.—City defeated \$16,000 bonds for sewers and water-works system. (Lately noted.)

Ark., Blytheville.—City will construct previously-noted sewers; bids by Board of Comms., Dist. No. 1, A. C. Lange, Secy., until July 30; includes 6000 ft. 15-in., 3500 ft. 12-in., 3000 ft. 10-in. and 52,000 ft. 8-in. sewer, 70 manholes, 60 flush tanks and pumping pit; R. C. Huston, Ch. Engr., Memphis, Tenn. (See Machinery Wanted.)

Fla., Clearwater.—City contemplates voting in October on sewer and street improvement bonds; J. R. Jeffords, Mayor.

Fla., Fort Meade.—City contemplates voting on bonds to construct sewer system and water-works. Address The Mayor.

Fla., Perry.—City is not ready with plans for lately-noted sewer construction; considering extension of 2000 ft.; C. L. Brandon, City Clerk.

Ga., Augusta.—River and Canal Com. let contracts aggregating \$12,789 as follows: Wm. F. Bowe at \$10,780, reinforced concrete sewer 49 in. in diam. on Reynolds St., 8th to 11th St.; T. G. McAuliffe at \$1184, 8 and 12-in. vitrified clay pipe sewer on Bay St., 6th to 9th St.

Mo., St. Louis.—Board of Public Improvements has tentative plans by W. W. Horner, Prin. Asst. Engr., and Leland Chivvis, Asst. Engr., for Mill Creek joint district sewer; storm-water overflow for existing sewers, water conveyed into tunnel through 5 drop shafts of special construction; contract in 2 sections; lower 2300 ft. of reinforced concrete about two-thirds of distance through soft ground; remainder of contract, entire length being 9500 ft., in tunnel through limestone; second section from end first section to Vandeventer and Duncan Aves., 10,500 ft.; all in tunnel through limestone and of same design as other portion except at crossing of 1 issue on upper end; sewer in issue to be rock up to within 2 to 3 ft. of crown; depth of tunnel below surface, 60 to 130 ft.; under city streets, except about 1200 ft. in second section, which is under railroad yards; tunnel to be 16½x16½ ft. inside dimensions, lined with concrete; construction to require 11,944 cu. yds. Class A excavation per lin. ft., and 2881 cu. yds. Class A concrete per lin. ft.; estimated expenditure, \$3,000,000. (Lately noted proposing to open bids about Aug. 15, etc.)

N. C., Mount Olive.—City is having preliminary plans prepared by J. B. McCrary



Co., Atlanta, Ga., for sewer system and water-works extension; estimated cost \$30,000. (Lately noted.)

S. C., Manning.—City votes July 21 on \$10,000 bonds for sewer system. Address The Mayor.

Tenn., Chattanooga.—City will construct brick storm sewer on Bennett Ave. westward from Willow St.; bids until July 8; A. N. Sloan, Commr. Dept. Streets and Sewers. (See Machinery Wanted.)

Tex., Dallas.—City, J. B. Winslett, Secy., will open bids July 13 to construct Fitzhugh outlet sewer from Fair Park sewer at Second Ave. to Ross Ave.; lately noted. (See Machinery Wanted.)

Tex., Ennis.—City, W. D. Farris, Mayor, purchased sewer system; will expend \$10,000 to extend and improve. (Lately noted voting \$30,000 bonds and having option on Ennis Sewer Co.'s system.)

Tex., Houston.—City will construct sanitary sewers on West St. from Lorraine to New Orleans St. and Keene and Waverly Sts. from Harrington to Montgomery Ave.; bids opened July 6; Ben Campbell, Mayor.

Tex., Houston Heights.—City considering \$20,000 expenditure to improve storm drainage, including establishment of surface gutters at street intersections to lead storm waters to White Oak Bayou; Robt. Cole, City Engr.

Va., South Boston.—City will construct 3300 ft. 8-in. sanitary sewer, flush tanks, manholes, etc.; will let contract; Henry Easley, Chmn. Sewer Com.; Wm. S. Morton, Engr., Box 361, South Boston.

W. Va., Huntington.—Board of Comms. receive bids until July 16 to construct trunk sewer in Fourth Ward; L. A. Pollock, Commr. Streets, Wharves, etc.; A. B. Maupin, City Engr. (See Machinery Wanted.)

W. Va., Williamson.—City voted \$150,000 bonds to construct sewers, etc. (See Miscellaneous Enterprises.)

## TELEPHONE SYSTEMS

La., New Orleans.—Navy Dept., Bureau Yards and Docks, H. R. Stanford, Chief, Washington, D. C., let contract to Henry Monk, Pensacola, Fla., at \$780 to erect radio building; brick on concrete and pile foundation; 1 story; 50x21 ft.; concrete roof; semi-fireproof construction; sound-proof receiving-room; sound-proof insulation; electric lighting; exhaust fan ventilating arrangement, noiseless in operation. (Lately noted.)

Tex., Hemphill.—Sabine Citizens' Telephone Co. (lately noted incpd.), capital stock \$5000, H. B. Arnold, Secy., will construct about 200 mi. line wire, exclusive of town systems, at cost about \$5000; longest line from central point, about 18 mi.; opens bids about July 15; Engr., W. H. Butler, Milam, Tex. (See Machinery Wanted.)

## TEXTILE MILLS

Ga., Manchester.—Cotton Duck, etc.—Manchester Cotton Mills will, it is reported, add 150 looms.

Mo., Kansas City.—Cotton Cloth.—Wyandotte Cotton Mills Co., capitalized at \$125,000, organized; is reorganization of Kansas City Cotton Mills Co.; has 10,680 spindles, 236 narrow looms, 48 cards, etc.

N. C., Asheville.—Satin, etc.—French Board Mfg. Co. will, it is reported, install 5000 spindles to spin yarns for its 84 looms.

N. C., Randleman.—Plaids, etc.—Deep River Mills has made no plans for rebuilding weaverroom. (Lately noted burned and to be rebuilt.)

## WATER-POWER DEVELOPMENTS

Okl., Okemah.—Canadian Power & Light Co., W. H. Dill, managing official, proposes to construct hydro-electric plant, developing 2000 H. P., on North Canadian River 7 mi. west of Okemah; estimated cost \$500,000; has not awarded contracts. (Previously noted organized, etc.)

## WATER-WORKS

Ala., Collinsville.—City defeated \$16,000 bonds for water-works and sewer system. (Lately noted.)

Ark., Eureka Springs.—City will expend \$25,000 in improvements to water-works, including raising and reinforcing old dam, filtering and settling basins, and extending water mains; no machinery; Albert C. Moore, Engr., Joplin, Mo.; contract let (as previously stated) to C. C. Stillian, Eureka Springs.

Ala., Tuscaloosa.—City will expend about \$85,000 to extend water-works; daily capacity 1,500,000 to 2,000,000 gals.; construct rein-

forced concrete reservoir, force and distributing mains, and install new pumping machinery; opens bids in few weeks; Morris Knowles, Engr., Oliver Bldg., Pittsburgh, Pa. (Lately noted.)

Fla., Crystal Springs.—City is reported as contemplating engaging J. B. McCrary Co., Atlanta, Ga., to prepare plans and specifications for water-works.

Fla., Daytona Beach.—City, Harry A. Horn, Clerk, postponed date of opening bids from July 11 (as lately noted) until later date to construct water-works; includes engines, pumps, 50,000-gal. steel tank on 85-ft. tower, 1600 ft. 8-in., 500 ft. 10-in., 8910 ft. 6-in., 385 ft. 4-in. cast-iron class B pipe; 7075 ft. 2-in. and 2600 ft. 1½-in. galvanized pipe with fittings, special castings, hydrants, valves and boxes, etc.; J. B. McCrary Co., Engr., 1408 Third National Bank Bldg., Atlanta, Ga. (See Machinery Wanted.)

Fla., Fort Meade.—City contemplates voting on bonds to construct water-works and sewer system. Address The Mayor.

Fla., Perry.—City, C. L. Branton, Clerk, is not yet ready with plans for lately-noted water-works construction; considering 2890 ft. water main extensions.

Ky., Hazard.—Hazard Water Co. contemplates improving and enlarging plant.

Ky., Shepherdsville.—Shepherdsville Electric Light, Ice & Water Co., capital \$10,000, incpd. by S. W. Bates and others. (See Electric Plants.)

Ky., Winchester.—City is reported as contemplating extension of water-works to Kentucky River. Address The Mayor.

Mo., Kansas City.—Fire and Water Comms. plan installing pumps at Turkey Creek pumping station to cost \$150,000 and increase daily capacity to 85,000,000 gals.

N. C., Mount Olive.—City is having preliminary plans prepared by J. B. McCrary Co., Atlanta, Ga., for water-works extension and sewer system; estimated cost, \$30,000. (Lately noted.)

Okl., Blackwell.—City is reported to vote on bonds for water-works. Address The Mayor.

Okl., Grandfield.—City voted \$15,000 bonds to install pipe line. Address The Mayor. (Lately noted to expend \$11,000 on water-works improvement.)

Okl., Mannford.—City contemplates voting on bonds for water-works. Address The Mayor.

Okl., Spavinaw.—Kay Water & Power Co., incpd. by Walter E. Kay, Anna V. Kay and Thos. H. Owen.

S. C., Manning.—City votes July 21 on \$30,000 bonds for water-works. Address The Mayor.

Tenn., South Pittsburg.—J. W. Adams Co. purchased South Pittsburg City Water Co. and contemplates improvements, including installation of meters.

Tex., Nixon.—A. W. Norton & Son, lately noted receiving franchise to construct water-works, state water-works are already established, but will be enlarged during coming winter.

## WOODWORKING PLANTS

Ala., Mobile.—Staves.—Knox Stave Co., capital stock \$100,000, incpd.; Wm. K. Knox, Pres., New York; Lucas E. Moore, V.-P., and Willerton Young, Secy.-Treas., both of New Orleans, La.

Ark., Argenta.—Shingles.—Argenta Shingle Crosscutting Co. organized, capital \$10,000; establish plant to mfr. shingles crosscut by Paty process; E. O. Maness, Pres.; M. Levy, Treas.; G. S. Dobbins, Secy.-Mgr.

Ark., Bentonville.—Cooperage.—E. T. Peck Cooperage Co. organized by E. T. Peck and others.

Ga., Thomasville.—Crates, etc.—Georgia Crate & Basket Co., R. C. Balfour, Mgr., will rebuild plant to mfr. crates and baskets; buildings of ordinary construction, about 250 ft.; install crate and basket machinery. (Lately reported burned.)

La., Morgan City.—Chapman-Storm Lumber Co. will build shingle mill. (See Manufacturing.)

S. C., Beaufort.—Veneer, etc.—Beaufort Veneer & Package Co. increased capital stock from \$15,000 to \$25,000.

Tenn., Harriman.—Spokes.—N. C. Blanchard Co. will rebuild spoke factory reported burned at estimated loss of \$10,000.

Va., Norfolk.—Staves.—Stave & Timber Corp. is reported to rebuild main buildings of plant in Berkeley reported burned at estimated loss of \$100,000.

## FIRE DAMAGE

Ala., Birmingham.—Wade Bros. Produce Co.'s warehouse at 2130 Morris Ave.; loss \$6500.

Ala., Northport.—Cunningham & Floyd's lumber mill on Sanders Ferry Rd., 6 mi. from Tuscaloosa; loss \$15,000 to \$20,000.

Ark., Little Rock.—Lesser-Goldman Cotton Co.'s storeroom, sample-rooms, yards and offices at 2d and Cumberland Sts.; loss on buildings and equipment, \$13,000.

Ark., Mulberry.—Mulberry Milling Co.'s plant; loss \$15,000.

Ark., Newport.—Southern Cotton Oil Co.'s mill.

Ark., Pocahontas.—L. C. Haynes' store.

N. A. Childs' store, J. W. Price's building.

Ark., Prairie Grove.—First National Bank Bldg.; loss \$3000.

Fla., Bristol.—Bristol Hotel; loss \$5000.

Ga., Resaca.—Davis Lumber Co.'s plant; loss \$15,000.

Ga., Letford.—W. G. Tuten's sawmill; loss \$25,000.

Ky., Fort Thomas.—Jos. Schwarz's barn and 4 cottages; loss \$15,000.

Ga., Waynesboro.—Burke County Poorhouse. Address County Comms.

Ga., Broxton.—Buildings of E. L. Bledsoe, Allen & Co., Broxton Hotel, Roddenberry & Clyatt, W. M. Rainbow, Byrd Drug Co. and J. B. Lott; total loss \$75,000.

Ga., Resaca.—Western & Atlantic R. R.'s station (J. L. McCallum, Supt., Atlanta, Ga.) and other buildings; loss \$30,000 to \$50,000.

Ky., Hopkinsville.—Dalton Bros.' sheds and 6 kilns of bricks; loss \$5000.

Ky., Louisville.—E. L. Hughes Lumber Co.'s office and main warehouse; loss \$10,000.

Ky., Louisville.—Mrs. Geo. W. Lawrence's residence at 619 S. 1st St.; B. T. Jansen's feed store at 748 S. 22d St.; loss \$5000.

Ky., Mt. Sterling.—Building owned by estate of B. F. Cockrell and D. N. Young; loss \$6000.

La., Welsh.—McCaffrey Hotel; A. B. Hall's store; Fontenot Department Store building; loss \$10,000.

Md., Baltimore.—Stables of Street Cleaning Dept. at Fulton Ave. and Winchester St.; loss \$5000; Jas. H. Preston, Mayor.

Md., Delmar.—Hudson Bros.' sawmill.

Miss., Columbus.—T. A. McGahey's 2 residences; loss \$6000.

Miss., Edwards.—Smith's Hall, dormitory at Southern Christian Institute; loss \$70,000.

Miss., Sumrall.—Buildings owned by J. J. Newman Lumber Co.

Mo., St. Louis.—Richard Ryan's dwellings at 623-25 Fyler Ave.; loss \$3200.

N. C., Middlesex.—Buildings occupied by Middlesex Supply Co., K. W. Ballentine and Nigh Bros.

S. C., Camden.—Camden Brick Co.'s plant.

Tenn., Harriman.—N. C. Blanchard Co.'s spoke factory; estimated loss \$10,000.

Tenn., Memphis.—South Memphis Brick Co.'s drying shed; loss \$8000.

Tenn., Park, R. Sta. Knoxville.—Edgar S. Lotz's residence, loss \$3500; J. W. Andes' residence, loss \$4000.

Tenn., Rockwood.—Richards Building, occupied by Cooper & Lane and others; T. L. Peterman & Co.'s building.

Tenn., Memphis.—Building at 1-3 N. Main St., owned by Katzenberger Bros.; loss \$12,000.

Tex., Belton.—Miller Bldg., including offices of Evening News, owned by H. B. Savage, and Journal, owned by O. F. Pyle; loss \$20,000.

Tex., Dallas.—Building owned by L. A. Pires and occupied by E. L. Bayle's garage, Texas Co.'s supply house, etc.; loss \$7500.

Tex., Brownwood.—John Baugh's residence; loss \$8000.

Tex., Dallas.—Barns and warehouse of Pabst Blue Ribbon Beer Co.

Tex., Dallas.—Mrs. L. A. Wisert's residence at 816 N. Pearl St., loss \$3000; Dr. Perry C. Baird's residence at 5105 Ross Ave., loss \$10,000.

Tex., Robert Lee.—W. P. Walling's residence; loss \$4000.

Tex., Mineral Wells.—The Tourist, New Hazel, Harrell House, Gates cottage, Lake Charles House, Carlisle House and Rent House, Burke House, L. E. Saman and Blake Sweett homes and other cottages; total loss, \$85,000.

Tex., San Marcon.—Henry Timmerman's stable; Sam Kone's carriage-house; total loss \$10,000.

Tex., Terrell.—H. B. Keith's stables; loss \$10,000.

Va., Martinsville.—J. M. Sharpe's sawmill.

Va., Norfolk.—Stave & Timber Corp.'s main buildings of plant, Berkeley; estimated loss \$100,000.

Va., Fishersville.—I. Q. Simmons' store; loss \$14,000.

Va., Richmond.—Richmond Electric Works, Edward J. Willis, 801 McDonough St., South Richmond; estimated loss, \$75,000.

W. Va., Asbury.—Lilly Lumber Co.'s saw mill on Mill Creek.

# BUILDING NEWS

## BUILDINGS PROPOSED

## APARTMENT-HOUSES

Ala., Birmingham.—E. P. Ewart, 5135 1st Ave., will expend \$4500 to \$5000 to erect apartment-house; 43x80 ft.; materials purchased. (Lately noted under Dwellings.)

Mo., Kansas City.—W. G. Wrenn will erect apartment-house at 4008-10 Troost Ave.; 3 stories; brick and stone; cost \$20,000; completion by Dec. 31.

Mo., Kansas City.—H. A. Campbell will erect 6-apartment flat at 2915-2918 Linwood Blvd.; 3 stories; cost \$15,000.

Mo., St. Louis.—Max Kreuger will erect 2-story tenement-house at 3003-05 S. 13th St.; cost \$4500.

Mo., St. Louis.—M. J. Kaplan will erect 2-story apartment on Northland Ave.

Mo., St. Louis.—M. F. Kehoe will erect 2 two-story tenements at 4672-74 Labadie St.; cost \$6000; construction by owner.

Mo., St. Louis.—C. F. Mueller will erect 2-story tenement-house at 1714 Ohio St.; cost \$3500; construction by owner.

Mo., St. Louis.—Highley Bros. will erect 2-story tenement-house at 2956-58 McKee Ave.; cost \$5500; construction by owner.

Mo., St. Louis.—E. Wagner Construction Co. will erect 3-story tenement-house at 578 Kingsbury St.; cost \$14,000; construction by owner.

Tenn., Memphis.—A. L. Gardner is reported to remodel residence at Raine Pl. and Madison Ave. for apartments; four 5-room suites; cost \$14,000.

Tex., El Paso.—J. K. Turnbull will erect brick tenement-house at 87 S. Oregon St.; cost \$6000.

Tex., El Paso.—B. A. Booth will erect apartment-house at North Santa Fe and West Blvd., Satterthwaite addition; 3 stories; cost \$45,000.

Va., Norfolk.—G. E. Wilkinson & Co. will erect tenement-house on Roscoe St. for Farant Investment Corp., 369 Arcade Bldg.; 25x44 ft.; ordinary construction; gravel roof; stoves; cost \$3000; plans and construction by owner.

## ASSOCIATION AND FRATERNAL

Fla., Fort Myers.—A. F. and A. M. are reported to erect lodge building; 3 stories; brick; lower floor for stores; second floor, offices; third floor, lodgerooms; cost \$40,000 to \$50,000.

Ga., Gainesville.—Brenau College is reported to erect Y. W. C. A. building.

Ky., Whitesburg.—Bids received until July 9 by E. P. Blair to erect \$20,000 Joint Junior Order and Owl hall in East End; pressed brick and stone.

La., Alexandria.—Alexandria Lodge, Knights of Columbus, plans to organize building association and erect building; 3 stories; lower floor for stores; upper floors for lodge purposes.

Okl., Oklahoma City.—B. P. O. E. acquired Eberle Bldg., 1618 W. Main St. and will remodel for lodge.

Okl., Okmulgee.—Loyal Order of Moose, Lodge No. 511, plans to organize building association and erect lodge building.

Tenn., Knoxville.—A. F. and A. M. are having plans prepared by Albert Baumann, Knoxville, to remodel Baxter Bldg. at Walnut St. and Clinch Ave. for temple; will

erect additional story; porch 13x41 ft. with marble columns; green tile cornice; shower baths, etc., in basement.

Tex., Austin.—B. P. O. E. Building Assn. opens bids in about 30 days to erect lodge building; 46x128 ft.; 3½ stories; ordinary construction; gravel roof; gravity heat; push-button type elevator; cost \$50,000; C. H. Page & Bro., Austin. (Lately noted.)

Tex., Comfort.—John Windlinger, Grand Secy., O. D. H. S., P. O. Box 1091, San Antonio, Tex., receives bids until July 15 to erect Home for Aged and Orphans of Order of Hermann Sons; plans on file at office of A. J. Hermann, Archt., 309 Central Office Bldg., San Antonio; call for structure of 2 stories and basement; fireproof; cost about \$50,000. (Lately noted.)

### BANK AND OFFICE

Ala., Birmingham.—Birmingham Athletic Club is reported to erect building for offices, etc. (See Miscellaneous.)

Ala., Birmingham.—C. M. E. Publishing Co. has plans by W. A. Rayfield & Co., Box 649, Birmingham, for office building; 100x100 ft.; cost (without mechanical equipment) \$40,000; semi-fireproof; tar and gravel roof; steam heat; electric lighting; Otis elevator to cost \$3000.

Ala., Lincoln.—J. H. and W. C. Wilson have plans for bank and store building. (See Stores.)

Ark., Sparkman.—J. T. Slaughter & Co. will erect brick building, portion of which will be occupied by bank.

Fla., Fort Myers.—A. F. and A. M. are reported to erect building for stores, offices and lodge. (See Association and Fraternal.)

Fla., Kissimmee.—R. D. Waring has plans by R. H. Ludlam, Kissimmee, for office building on Broadway; 2 stories; brick; 50x70 ft.; two stores on lower floor; Indiana limestone and oriental brick; cost \$10,000.

Ga., Atlanta.—Mrs. J. B. Whitehead indefinitely postponed erection of office-building. (W. L. Stoddard, 30 W. 38th St., New York, previously reported preparing plans.)

Ga., Macon.—Citizens' National Bank, E. W. Stetson, Prest., opened bids to erect building; retained 5 lowest bids for 30 days, in which time contract will be let; W. L. Stoddard, Archt., 30 W. 38th St., New York. (Lately noted.)

Ga., Savannah.—Wage Earners' Loan & Investment Co., Incptd. with capital stock of \$50,000, will erect building at Alice and W. Broad Sts.; buff brick and Indiana limestone; 3 stories and basement; heating plant.

Ky., Hindman.—Smith & Combs have about completed office building, etc., lately noted. (See Stores.)

Md., Mt. Airy.—First National Bank has plans by B. E. Kepner, Frederick, Md., for bank building; 43x32 ft.; cost \$9000 to \$10,000; fireproof; slag roof; steam heat to cost \$250; gasoline lighting; \$85; open bids July 9; address proposals to A. W. Hall. (Lately noted.)

N. C., Rocky Mount.—Rudolph Shaloski, Spartanburg, S. C., is having plans prepared for store and office building. (See Stores.)

Okl., Oklahoma City.—Security National Bank, Wm. Mead, Prest., leased site at 111 N. Boraday and will erect bank building; 2 stories and basement; gray granite and stone; cost \$35,000; R. D. Church, Archt., Kansas City, Mo.

Okl., Tulsa.—Oil Well Supply Co. is reported to erect \$50,000 office building and warehouse at 1st St. and Ellwood Ave.

S. C., Columbia.—Bank of Columbia, B. F. Taylor, Prest., will remodel building at 1547 Main St.; provide store room on Taylor St. 20x40 ft.; install fire and burglar-proof chrome steel vault 9x15 ft., equipped with time lock; provide 2 entrances, etc.

S. C., Latta.—Sayre & Baldwin, Citizens' National Bank Bldg., Raleigh, N. C., are preparing plans to remodel bank.

Tenn., Nashville.—Dr. G. C. Savage is reported to erect office building at 165-69 8th Ave.; 4 stories; variegated tile front; lower floor for stores; cost \$20,000 to \$25,000.

Tex., Belton.—Texas Light & Power Co. will erect office building, warehouse, etc., on Central Ave.

Tex., Dallas.—I. A. Walker, Dallas, prepared plans for proposed Angus Bldg.; 2 stories and basement.

Tex., Trinity.—Jackson-Vreeland Co., Kansas City, Mo., will erect office building. (See Land Development.)

W. Va., Buchanan.—Traders' National Bank contemplates erecting bank and office building; terra-cotta or stone; fireproof;

cost about \$60,000; will select architect about July 15.

W. Va., Charleston.—John L. Thornhill will erect business and office building. (See Stores.)

W. Va., Charleston.—Mrs. A. Boirasky has plans for store and office building. (See Stores.)

W. Va., Charleston.—S. A. Moore will erect store and office building. (See Stores.)

W. Va., Dunbar.—Dunbar Land Co., Dunbar and Charleston, W. Va., will construct office building to cost \$10,000.

### CHURCHES

Ala., Birmingham.—Baptist Church, Rev. I. H. McKinney, pastor, has plans by W. A. Rayfield & Co., Box 649, Birmingham, for building; 50x70 ft.; ordinary construction; metal-shingle roof; hot-air heat; electric lighting; cost \$10,000.

Ala., Eufaula.—First M. E. Church, C. G. Caldwell, Secy. Building Comm., 425 Broad St., will erect building; cost \$20,000 to \$25,000. (Lately noted.)

Ark., Little Rock.—Capitol View Methodist Church will improve building; cost \$15,000. Address The Pastor.

D. C., Washington.—German Lutheran Church, Wisconsin Ave. and Volta Place N. W., will erect building to replace present structure. Address The Pastor.

Fla., Key West.—St. Peter's Episcopal Church has plans by T. M. Bryan, Key West, for building; reinforced concrete; terra-cotta trimmings; seating capacity 440; main auditorium 36x80 ft.; altar space 20x50 ft.

Ga., Madison.—First Methodist Church opens bids July 13 to erect building; Sayre & Baldwin, Archts., Bleckley Bldg., Anderson, S. C., and Citizens' National Bank Bldg., Raleigh, N. C. (Lately noted to cost \$30,000.)

Ky., Louisville.—Clifton and Crescent Hill M. E. Church, Rev. A. P. Lyons, Pastor, will erect building to replace structure at Frankfort and Ewing Aves.; cost \$30,000.

Ky., Middlesboro.—First Baptist Church opens bids July 15 to erect building; 90x106 ft.; ordinary construction; metal tile and Carey's roof; vapor system of heating; direct and indirect lighting; cost \$25,000; R. P. Graf & Sons, Archts., Knoxville, Tenn. (Lately noted.)

La., Monroe.—Congregation B'Nai Israel, Samuel Kaplan, Chrmn. Building Comm., receives bids until Aug. 6 at office of Young Men's Hebrew Association to erect Temple; separate proposals requested for general contract, exclusive of trimmings and decoration work in Temple Auditorium, heating, plumbing and lighting; plans and specifications at offices of Mr. Kaplan, and Stevens & Nelson Co., Archts., 2nd floor, Liverpool & London & Globe Bldg., New Orleans, La. (Lately noted.)

Md., Baltimore.—West Baltimore Station M. E. Church, Rev. J. O. Wrightson, pastor, 1373 Stricker St., will erect building on Park Heights Ave.; details not determined.

Miss., Amory.—First Baptist Church plans to erect building; cost \$20,000. Address The Pastor.

Miss., Moss Point.—Methodist Church, Rev. B. J. Jones, pastor, has plans by Wm. Drago, New Orleans, for building; 44x196 ft.; 2 stories; brick; main auditorium to seat 250, and to be connected with Sunday-school room by rolling partitions; upper floor for classrooms; concrete steps; cost \$20,000. (Previously noted.)

Mo., Poplar Bluff.—First M. E. Church, South, is having plans prepared by John Galsford, Memphis, Tenn., for building; cost about \$30,000.

N. C., Black Mountain.—Auditorium.—Episcopal Church Retreat, Bishop J. M. Horner, Prest., Asheville, plans to construct auditorium.

N. C., Greensboro.—Presbyterian Church of the Covenant, Rev. R. Murphy, pastor, will erect building; colonial style; seating capacity 600 to 700; 80x30 ft.; ordinary construction; tin and slate roof; gravity system of heating; electric lighting; Harry Barton, Archt., Greensboro, N. C.; open bids about middle of July. Address proposals to Chas. R. Brockman.

Okl., Claremore.—Baptist Church has plans by Geo. Winkler, Tulsa, Okla., for building; bids opened July 15.

Okl., Henryetta.—Christian Church will erect tabernacle; Drs. T. L. Noblitt and W. L. Stephenson are interested.

S. C., Cameron.—Lutheran Church is having plans prepared by H. E. Bonitz, Wilmington, N. C., for building; cost \$15,000.

Tenn., Chattanooga.—First Universalist Church, Rev. L. R. Robinson, pastor, will

expend \$15,000 to erect building; ordinary brick construction; details not determined; Archt. not selected; construction probably by Sept.; address proposals to H. C. Abercrombie, 103 Read Ave., Chattanooga. (Lately noted.)

Tenn., Huntingdon.—Geo. H. Kelly is reported interested in erection of Christian Chapel Church.

Tex., Austin.—First Baptist Church, Rev. W. A. Hamlett, pastor, opens bids about Oct. 1 to erect building; 78x130 ft.; cost (without mechanical equipment) \$60,000; semi-fireproof; metal or tile roof; steam heat to cost \$2000; electric lighting; prism sidewalk lights; C. W. Bulger & Son, Dallas. (Lately noted.)

Tex., Frisco.—Methodist Church, Rev. Ira C. Kiker, pastor, will erect building; 52x60 ft.; ordinary brick construction; metal-shingle roof; electric lighting; cost \$10,000; Archt. not selected; open bids about Aug. 15. (See Machinery Wanted.)

Tex., Jacksboro.—First Presbyterian Church, Thos. D. Sporer, Chrmn. Building Com., has plans by W. A. Rayfield & Co., Box 649, Birmingham, for building; 40x70 ft.; ordinary construction; metal-shingle roof; furnace heat; electric lighting; cost \$5000. (Lately noted.)

Tex., San Saba.—Methodist Church will erect building to cost \$35,000. Address The Pastor.

Va., Port Norfolk, P. O. at Portsmouth.—Methodist Episcopal Church receives bids until July 15 (extended date) to erect building; 78x110 ft.; ordinary construction; brick and stone; Buckingham slate roof; low-pressure steam heat; electric lighting; plans and specifications by Chas. M. Major, Kirm Bldg., Portsmouth, on file at office of J. C. Smith, 2d St. and Chautauqua Ave., Port Norfolk; C. W. Steele, Secy. of Com. (Lately noted.)

Va., Richmond.—Calvary Baptist Church, Rev. C. A. Jenkins, pastor, 716 Hawthorn Ave., Ginter Park, is having plans prepared by J. M. McMichael, Charlotte, N. C., for building; 85 ft. sq.; cross-shaped; cost \$30,000; plans ready by August; architect may be addressed. (Lately noted.)

Va., Stuart.—Methodist Church plans to erect building to cost \$6000 to \$7000.

W. Va., Charleston.—Calvary Baptist Church is having plans prepared by Jas. L. Montgomery, Charleston, for building; brick veneer; 85x150 ft.; auditorium to seat 1200; cost \$30,000. (Previously noted.)

W. Va., Charleston.—United Brethren Church has plans by H. Rus Warne, Charleston, for brick veneer and hollow tile building; cost \$15,000.

### CITY AND COUNTY

Ala., Birmingham.—Auditorium.—Supreme Court declared illegal \$200,000 bond issue to erect auditorium; Culpeper Exum, Prest. of City Com. (City previously noted to have voted this issue.)

Fla., Fort Meade.—City Hall.—City is reported considering \$7000 bond issue to erect city hall. M. O. Wilson, Mayor.

Fla., Miami.—Fire Stations.—City is having plans prepared by W. C. DeGarmo, Miami, for 2 sub-fire stations at Riverside and South Side.

Fla., Quincy.—Fire Station.—City, J. P. Smith, Clerk, opens bids July 27 to erect fire station; 44x54 ft.; brick; ordinary construction; tin roof; tower covered with metal shingles; cost \$4000. (Lately noted.)

La., New Orleans.—Police Station and Court Building.—Dept. of Public Finance, A. G. Ricks, Com., opened bids to erect police station and criminal court building; 2 stories; fireproof; composition roof; John Minot, New Orleans, is lowest bidder at \$74,000; E. A. Christy, Archt., New Orleans. (Lately noted.)

Mo., St. Joseph.—Workhouse.—Board of Public Works, Rudolph F. Helm, Prest., contemplates erecting workhouse; plans not definite. (Lately noted.)

N. C., Ashboro.—Jail.—Sayre & Baldwin, Citizens' National Bank Bldg., Raleigh, N. C., are preparing plans for jail.

Okl., Stilwell.—Jail.—Adair county votes Aug. 4 on \$20,000 bonds to erect courthouse and jail. Address County Comms.

Tex., Dallas.—Comfort Station.—City has plans by Lang & Wittich, Dallas, for 2 comfort stations in City Park; bids received until July 7; Mrs. E. A. Marty, Secy. Park Board. (Lately noted.)

Tex., Ennis.—City Hall.—City will erect city hall; 50x115 ft.; semi-fireproof; metal roof; cost \$17,500; M. D. Farris, Mayor. (Lately noted voting \$17,500 bonds.)

Tex., Fort Worth.—Home.—Tarrant County Comms. will have plans prepared for orphans' home.

Tex., Houston Heights.—City Hall.—City has plans by A. C. Pigg, Houston Heights, for city hall; assembly hall on first floor; cost \$20,000.

### COURTHOUSES

Ark., Bentonville.—Benton County Comms. are having plans prepared by Stevens & Nelson, New Orleans, La., for courthouse to cost about \$175,000; Bedford or Carthage stone; fireproof.

La., New Orleans.—Dept. of Public Finance opened bids to erect police station and criminal court building. (See City and County.)

Mo., St. Louis.—H. H. Hohenschild, 310 Navarre Bldg., St. Louis, states plans for Christian county courthouse will not be finished until last of July; plans call for 3-story, 60x70-ft. fireproof building; 3-ply built-up asbestos roof; cost \$65,000. (Lately noted.)

Okl., Stilwell.—Adair county votes Aug. 4 on \$20,000 bonds to erect courthouse and jail. Address County Comms.

Tex., San Antonio.—Bexar county rejected all bids to erect additional wing to courthouse; Leo M. J. Diemann and Chas. Boehl-hawe, Asso. Archts., San Antonio. (Lately noted to cost \$75,000.)

### DWELLINGS

Ala., Birmingham.—C. E. Gillespie will erect 8 one-story frame residences at John St. and Agnes Ave.; cost \$3200.

Ala., Birmingham.—F. F. Person will erect 2-story frame residence on 15th Ave.; cost \$3000.

Ala., Birmingham.—L. K. Mackey will erect 2-story frame residence at 3917 Summitt St.; cost \$5000.

Ala., Jasper.—H. W. Crawford has plans by Ben Price, 518 Empire Bldg., Birmingham, for dwelling; flexible asbestos shingle roof; hot-water heat; day labor.

D. C., Washington.—H. R. Howenstein Co., 1314 F St. N. W., will expend \$2000 each to erect 4 dwellings at 2515-21 N. Capitol St.; ordinary construction; tin roof; hot-water heat; gas and electric lighting; W. R. Talbot, Archt., 1314 F St. N. W., Washington; construction by owner. (Lately noted.)

D. C., Washington.—C. H. Taylor, 3427 34th Place N. W., has plans by R. G. Moore, Washington, for dwelling at 3444 Macomb St. N. W.; cost \$7000; construction by owner.

D. C., Washington.—S. E. Snyder, 2350 Q St. S. E., has plans by J. R. Coddle to erect two dwellings at 2318 Chester St. N. E.; cost \$4000.

D. C., Washington.—J. H. Hayden, 608 Wilkens Bldg., will remodel dwelling at 1746 N St. N. W.; cost \$6000.

D. C., Washington.—Middaugh & Shannon, 205 Colorado Bldg., will erect 9 dwellings at 513-29 Shepherd St. N. W.; cost \$34,000; plans and construction by owner.

D. C., Washington.—Thrift Building Co., 709 Union Trust Bldg., will erect 5 dwellings from 1724 to 1732 33d St. N. W.; cost \$11,000; construction and plans by owner.

D. C., Washington.—Winfield Preston, 1718 8th St. N. W., will expend \$3500 each to erect 3 dwellings at 3912-16 Park Pl.; 20x32 ft.; ordinary construction; hot-water heat; gas and electric lighting; contract let to Rose Bros., 1809 14th St. N. W., Washington, for roof; Hunter & Bell, Archts., Southern Bldg., Washington; construction by owner. (Lately noted.)

Fla., Daytona.—S. H. Grove will erect residence at Orange Island Park; 39x58 ft.; ordinary construction; tile roof; cost \$5000; plans and construction by owner. (Lately noted.)

Fla., Miami.—B. F. Davis will erect bungalow; concrete; red tile roof; cost \$3000.

Fla., Miami.—J. E. Wilson will erect residence on Park of the Pines; reinforced concrete; red tile roof; 2 stories; 8 rooms; cost \$5000.

Fla., Miami.—Matthew Elser will erect residence; reinforced concrete; 2 stories; basement and roof garden; central portion carried up into tower above roof garden and covered with red Spanish tiles; French windows and sash doors; natural rock chimney 14 ft. wide; white stucco exterior; cost \$20,000.

Fla., Ojus.—W. R. Walker will erect 8-room residence.

Fla., Pensacola.—J. J. McNamee has plans by Alfred & Alfred, Pensacola, for dwelling; 40x60 ft.; frame; vulcanite asphalt shingle roof; gas and electric lighting.

Ga., Atlanta.—Hardy and Ben Badgett will



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erect 2-story dwelling on E. North Ave.; cost \$4000; day labor.

Ga., Atlanta.—J. B. Hightower will erect 2-story brick-vener dwelling at 65 Fairview Rd.; cost \$8000; day labor.

Ga., Atlanta.—G. F. Turner and C. D. Moore will erect 4 frame dwellings at 2628 Buchanan St.; cost \$5500; day labor.

Ky., Lexington.—Mrs. O. H. Chenault will erect 2-story 15-room brick residence on S. Ashland Ave.; cost \$7000.

Ky., Louisville.—M. L. Baker will erect brick-vener dwelling at 1904 Deer Park; cost \$3000.

Ky., Louisville.—W. E. Selva will erect residence at 2308 Sherwood Ave.; brick veneer; cost \$5500.

La., New Orleans.—Alvin P. Howard will erect 2-story brick and veneer residence; cost \$30,000.

La., New Orleans.—L. G. Ling Co. will erect number of bungalows; 6 under construction.

La., New Orleans.—Harry Singer will erect two double cottages at 8824 F St.; cost \$4000.

La., New Orleans.—Mrs. H. S. Holden will erect 1-story frame residence at 2133 Pine St.; cost \$3000.

Md., Baltimore.—Frank Novak Realty Co., 74 N. Kenwood Ave., has plans by Callis & Callis, 2055 Kennedy Ave., Baltimore, for 10 dwellings at 2811-19 Monument St. and 2821-29 Madison St.; 2 stories; 13x42 ft.; ordinary construction; tin roof; cost \$12,500; construction by owner.

Md., Baltimore.—Herbert D. Stitt, 232 St. Paul St., will erect residence in Sudbrook Park.

Md., Baltimore.—Colin McLean, Fidelity Bldg., will have plans prepared by Haskell & Barnes, 301 N. Charles St., Baltimore, to rebuild burned Ingram residence on Park Heights Ave.; details not determined.

Md., Catonsville.—Schatz Bros. acquired 6-acre tract on Summit Ave. and will erect number of cottages.

Mo., Kansas City.—J. F. Meade, Asst. Cash, Southwestern Natl. Bank of Commerce, will erect residence.

Mo., Kansas City.—Earl C. Hallar, 5929 Brookside Blvd., will expend \$3000 to erect residence; 24x34 ft.; ordinary construction; shingle roof; hot-air blast; electric lighting; plans and construction by owner; sub-contracts include stone work, cement sidewalk, lighting, heating, etc. (Lately noted.)

Mo., St. Louis.—George Mitchell will erect 2-story dwelling at 5841 Berlin St.; cost \$4000; construction by owner.

Mo., St. Louis.—R. C. Duncan will erect 1-story dwelling at 5764 Goodfellow St.; cost \$3000.

Mo., St. Louis.—H. Dilschneider will erect four 2-story dwellings at 3559-63-65-67 McRee St.; cost \$14,000.

Mo., St. Louis.—Mrs. Emma B. Flintcraft will erect residence on Westgate Ave.

N. C., Burnsville.—J. A. Watson has plans by C. G. Mitchell, Johnson City, Tenn., for residence; 64x67 ft.; ordinary construction; metal shingle roof; grates; electric lighting; cost \$4000.

N. C., Lake Toxaway.—Frank M. Inman, Atlanta, has plans by Lodowick J. Hill, Jr., 212 Atlanta National Bank Bldg., Atlanta, for bungalow; 9 rooms and 3 baths.

N. C., Winston-Salem.—J. L. Lashmit will erect 2-story 9-room frame dwelling on Spruce St.; cost \$3500.

Okla., Tulsa.—Harriett Measley will erect 2-story frame dwelling at 620 S. Denver St.; cost \$5000.

Okla., Tulsa.—L. C. Check will erect frame dwelling at 1318 S. Boston St.; cost \$3300.

Tenn., Johnson City.—J. M. Horton has plans by C. G. Mitchell, Johnson City, for dwelling on Locust St.; 44x70 ft.; metal shingle roof; hot-water heat; electric lighting; cost \$3000.

Tenn., Memphis.—E. Oppenheimer will erect residence at 1516 Harbert Ave.; cost \$4500.

Tenn., Memphis.—Mrs. Sam Frank will erect residence at 367 Stonewall Pl.; cost \$6500.

Tenn., Memphis.—J. A. Tincher will erect residence at 535 S. McLean Blvd.; cost \$5500.

Tenn., Memphis.—J. R. Klyce will erect residences at 1709 and 1719 Foster St.; cost \$4500.

Tenn., Memphis.—C. H. Moore will erect residence at 1556 N. Parkway; cost \$3550.

Tenn., Memphis.—A. P. Sims will erect residence at 1069 Greenlaw Ave.; cost \$3500.

Tenn., Memphis.—W. W. Halstead will erect residence at 13 Tucker St.; cost \$6700.

Tenn., Memphis.—John Miller will erect residence at 1950 Carr Ave.; cost \$3750.

Tenn., Memphis.—J. E. McCadden will erect residence at 44 S. Evergreen St.; cost \$4500.

Tenn., Memphis.—Mrs. Stella K. Weiss will erect residence at 24 S. Evergreen St.; cost \$4200.

Tenn., Nashville.—Ed M. Haynes will erect frame dwelling at 1531 Forest Ave.; cost \$3000.

Tex., Dallas.—Mrs. I. T. Morgan will erect residence at 3037 Forest St.; 2 stories; frame; 12 rooms; cost \$4000.

Tex., Dallas.—Mrs. E. L. Allen will erect residence at 4502 Swiss St.; brick veneer; 10 rooms; 2 stories; cost \$3000.

Tex., Dallas.—T. F. Laughlin will erect two frame cottages at 5311-15 Rowen St.; 5 rooms each; cost \$4000.

Tex., Dallas.—A. S. Tucker will erect 6-room tile cottage at 5015 San Jacinto St.; cost \$3500.

Tex., Dallas.—H. Jester will erect 2-story 7-room frame residence at 521 Junius St.; cost \$3500.

Tex., Dallas.—H. H. Clark will erect 2-story 9-room frame residence at 3510 Gilbert St.; cost \$3500.

Tex., Dallas.—Mrs. W. M. Miller will erect 8-room brick veneer residence at 323 N. Jefferson St.; cost \$4000.

Tex., Dallas.—R. H. Clem will erect 20-room 2-story frame residence at 5016-18 Bryan St.; cost \$6500.

Tex., Dallas.—Preston Corley will erect 8-room frame residence at 726 9th St.; cost \$3125.

Tex., Dallas.—Wm. Whitaker will erect 2-story 10-room frame residence at 3906 Bowser St.; cost \$4000.

Tex., Dallas.—J. M. Higginbotham will erect residence 5315 Swiss St.; 8 rooms; brick-veneer; cost \$8550.

Tex., El Paso.—Phoenix-El Paso Building Co. will erect brick dwelling on E. El Paso St.; cost \$3500.

Tex., El Paso.—Mayfield Building & Improvement Co. will erect 10 bungalows in East Montana.

Tex., Itasca.—E. P. Files will erect residence at cost \$8000.

Va., Richmond.—E. P. Cathcart will erect 11 2-story brick dwelling on Wallace St.; cost \$20,000.

Va., Richmond.—Jas. H. Tribune will erect detached 2-story brick dwelling at 905 St. John St.; cost \$3750.

Va., Richmond.—Frank A. Jones will erect dwelling on Floyd Ave.; 2 stories; brick; cost \$4291.50.

Va., Roanoke.—M. L. Nininger will erect residence; 2 stories; brick cased; cost \$4000.

W. Va., Bluefield.—Ed. McQuail of Turkey Gap Coal & Coke Co., Ennis, W. Va., is reported to erect residence on Boyer St.

W. Va., Charleston.—Darrah & Laher will erect 2 residences on Duffy St.; 2 stories; frame; cost \$3000.

W. Va., Dunbar.—Dr. Geo. MacQueen of Kanawha Valley Hospital, Charleston, W. Va., will erect two 2-story dwellings; brick and frame.

W. Va., Parkersburg.—Welles Crawford will erect 3 five-room bungalows.

## GOVERNMENT AND STATE

D. C., Washington.—Federal Building.—Treasury Dept., Oscar Wenderoth, Supervising Archt., Washington, D. C. Bids until July 23 to construct proposed quarters for Stamp Division, Internal Revenue Commrs. office, Auditor's Bldg. (old building of Bureau of Engraving and Printing), Washington; drawings and specifications obtainable on application at this office at discretion of Supervising Archt. (Lately noted.)

D. C., Washington.—Bureau of Printing and Engraving.—W. E. Mooney, Evans Bldg., Washington, is lowest bidder at \$6093 to construct promenade roof covering on building for Bureau of Printing and Engraving.

Fla., Pensacola.—Laboratory.—State Board of Health, Jacksonville, will probably let contract (after July meeting) to erect bacteriological laboratory; date not set. (Lately noted to consider plans and specifications at June meeting.)

Ky., Georgetown.—Postoffice.—Treasury Dept., Oscar Wenderoth, Supervising Archt., Washington, D. C. Bids until Aug. 12 to construct complete (including mechanical equipment, fixtures and approaches) U. S. postoffice; 2 stories and basement; ground area, 4800 sq. ft.; fireproof; stone facing; composition roof; drawings and specifications obtainable from custodian at site or at this office, at discretion of Supervising Archt.

Ky., West Point.—J. C. Oakes, Major Engr., Louisville, receives bids until July 31 to erect 4 brick dwellings at Dam No. 43, Ohio River, 4 mi. below West Point; information on application.

La., New Orleans.—Naval Station.—H. R. Stanford, Chief of Bureau of Yards and Docks, Navy Dept., Washington, D. C., opens bids July 18 (postponed from July 6) for repairs to buildings at naval station; plans and specifications may be had upon application to bureau or to commandant of naval station. (Lately noted.)

Md., Baltimore.—Penitentiary.—State, Phillips Lee Goldsborough, Governor, Annapolis, Md., is having plans prepared by F. E. Torrey, 813 Newington Ave., Baltimore, for improvements to State Penitentiary, including 4th story to hospital building and roof garden with 7-foot walk around it; cost \$30,000. Contractors estimating are: Morrow Bros., Fidelity Bldg.; W. E. Burnham, Law Bldg.; Monmonier & Sorrell, 1711 McCulloh St.; B. F. Bennett Bldg. Co., 123 S. Howard St.; Cowan Bldg. Co., 106 W. Madison St.; all of Baltimore.

Tenn., Covington.—Postoffice.—Treasury Dept., Oscar Wenderoth, Supervising Archt., Washington, D. C., rejected all bids to erect postoffice; 3500 sq. ft. ground area; 2 stories and basement; brick and stone facing; slate and composition roofing. (Lately noted.)

Va., Wytheville.—Postoffice.—Treasury Dept., Oscar Wenderoth, Supervising Archt., Washington, D. C. Bids until Aug. 4 to construct complete (including mechanical equipment, interior lighting fixtures and approaches) U. S. postoffice; 2 stories and basement; ground area, 4100 sq. ft.; brick facing; tin and composition roof; first floor fireproof; drawings and specifications obtainable from custodian at site or at this office, at discretion of Supervising Archt.

W. Va., Welch.—Nurses' Home.—State Board of Control of West Virginia, J. S. Lakin, Pres., Charleston, receives bids until July 15 to erect 2-story brick building for Nurses' Home at Miners' Hospital No. 1; plans and specifications at office of hospital at Welch; State Board of Control, Charleston; Herald-Dispatch, Huntington, W. Va.; Bluefield Telegraph, Bluefield, W. Va.; Mingo Republican, Williamson, W. Va.

## HOTELS

Ala., Birmingham.—William Leslie Welton is reported to erect hotel, etc. (See Stores.)

Ala., Piedmont.—C. N. Thompson and others are reported organizing company to erect hotel; brick; fireproof; cost \$15,000.

Ark., Ashdown.—Dr. A. B. Bishop and C. A. Bishop will erect 2-story fireproof hotel on Front St.; reinforced concrete; brick walls; frontage 50 ft.; tile floor in cafe.

Fla., Ojus.—Cooper Bros. will erect hotel; 2½ stories; 40 rooms.

La., New Orleans.—Metropolitan Improvement Co. Incptd. with \$500,000 capital stock to erect hotel, department store and establish park; Rev. J. L. Wilson, 516 S. Claiborne St., is interested.

Md., Baltimore.—Hugh Reilly has plans by John K. Stack, 12 E. Lexington St., Baltimore, and is receiving revised bids for improvements to hotel at 410 W. Franklin St.; one section, 22x50 ft., 4 stories and cellar; one section, 20x23 ft., 1 story and cellar; cost (without mechanical equipment) \$40,000; fireproof; slag roof; steam heat to cost \$3000; electric lighting, \$2000; granolithic sidewalks, \$100; electric passenger elevator, \$3000; contractors estimating are: John J. Moylan, 117 E. Center St.; Fidelity Construction Co., Knickerbocker Bldg.; R. B. Mason, 308 W. Madison St.; all of Baltimore. (Lately noted.)

Mo., Kansas City.—Southside Investment Co., 1005 Waldheim Bldg., contemplates erecting 5-story addition to store building for hotel; plans not definite. (See Stores.)

N. C., Black Mountain.—Episcopal Church Retreat, Bishop J. M. Horner, Pres., Asheville, plans to construct hotel.

Tenn., Memphis.—Waldorf Hotel will expend \$3000 for repairs at Main St. and Gayoso Ave.

Tex., Austin.—J. P. Lightfoot is reported promoting company to erect \$100,000 hotel, dancing pavilion and theater in connection with development of Bull Creek property. (See Land Developments.)

Tex., Dallas.—C. H. Bolans is reported as probably to erect 3-story hotel on Akard St. near Young St.

## MISCELLANEOUS

Ala., Birmingham.—Clubhouse.—Birmingham Athletic Club, Edw. B. Anderson, Pres., is reported to erect dormitory build-

ing; 10 stories; brick and concrete; 2 entrances; lower floor for stores, offices, etc.; second floor, dining and restrooms, etc.; portico around second floor; third to eighth floor for 128 sleeping rooms, each with bath; gymnasium on ninth floor, with circular running track, basketball, handball and spash courts; gallery on tenth floor; roof garden; swimming pool 165x38 ft. in basement; cost \$350,000. Mr. Anderson wires Manufacturers Record: "Nothing definite has been decided for new building."

Ala., Spring Hill.—Home.—Episcopal Church Home Com., John E. Mitchell, Sec., Mobile, is having plans prepared by John A. Wetzel, Mobile, for home; administration building and 3 or 4 cottages; accommodations for 150 children; fireproof; hollow tile construction with stucco; tile roof; steam laundry machinery; gymnasium; shower baths; cost \$45,000. (Lately noted.)

Ga., Savannah.—Fair Buildings.—First Georgia Dist. Fair Assn. will erect buildings; main structure 60x400 ft.; ordinary construction; rubber roof; cost \$6000; day labor; for information address J. R. Miller, Savannah. (Mr. Miller lately reported having acquired land to erect fair buildings.)

Mo., Joplin.—Stable.—Standard Oil Co., 26 Broadway, New York, is reported to erect stable. (See Warehouses.)

Mo., Joplin.—Hospital.—Children's Home, Mrs. C. M. Spring, Pres. Board of Directors, will erect hospital building; 4 or 5 rooms; C. H. Sudholder, Archt.

Mo., Kansas City.—Pens.—Union Pacific R. R., C. H. Jungling, Supvr. B. & B., plans to construct pens at Kansas City stock yards.

Mo., St. Louis.—Funeral Parlors, etc.—Arthur J. Donnelly is receiving bids to erect building for funeral parlors, chapel, reception-rooms, etc.; vaults in basement; 3 stories; site 55x135 ft.

N. C., Statesville.—Barn.—Fred H. Congen will erect dairy barn. (See Miscellaneous Enterprises.)

N. C., Wilmington.—Cottage.—Girls' Friendly Society of Diocese of East Carolina will expend several thousand dollars to erect holiday cottage at Wrightsville Beach; 2 stories; 50x70 ft.; Mrs. Thos. P. Noe, Mrs. Henry Peschau, Mrs. Geo. Thomas, Jr., and others, Com.

S. C., Greenville.—Entrance.—Greenville Cemetery Assn. has plans by A. Ten Eyck Brown, Atlanta, for entrance building for Graceland Cemetery; 2 wings, 25x30 ft., with arch over driveway; mill construction; slate roof; cost \$7500; construction to begin July 25. (Lately noted.)

Tenn., Alexandria.—Fair Building.—Alexandria Fair, Rob Roy, Secy., will rebuild structure; one-fourth mile circle; frame; metal or rubber roof; cost \$6000; open bids about July 15. (Lately reported burned.)

Tex., Austin.—Dancing Pavilion.—J. P. Lightfoot is reported promoting company to erect dancing pavilion, etc. (See Hotels.)

Tex., Dallas.—Sanitarium.—St. Paul's Sanitarium is having plans prepared by E. Overbeck, Dallas, for addition to sanitarium.

Tex., Galveston.—Shed.—Harris-Irby Cotton Co. will erect shed; 300x114 ft.; ordinary construction; galvanized iron roof; bids opened July 1; construction July 15. (Lately noted to cost \$30,000 to \$40,000.)

W. Va., Huntington.—Bathhouse.—Queen City Bathing Beach organized by Alex. Garred and H. H. Dye; will erect bathing-house, pavilion, etc.

## SCHOOLS

Alabama.—Tennessee Coal, Iron & R. R. Co., Birmingham, Ala., will build 4-room \$4000 school at Ensley division; also combined school and auditorium, costing about \$6000, at Muscoda ore mines division.

Ala., Huntsville.—Board of Education plans to issue \$30,000 bonds to erect high school.

Fla., Apalachicola.—Board of Public Instruction, Franklin county, will request election on bond issue to erect school in Apalachicola Special School Dist.

Fla., Avon Park.—Special School Sub. Dist. in northeastern part of De Soto county voted \$350,000 bonds for schools. (See Fla., Zolfo.)

Fla., Crewsville.—Special School Sub. Dist. in northeastern part of De Soto county voted \$350,000 bonds for schools. (See Fla., Zolfo.)

Fla., Gainesville.—Gainesville Sub-School Dist. plans to issue \$30,000 bonds to improve schools, liquidate indebtedness, etc. Address Dist. School Trustees.

Fla., Sebring.—Special School Sub. Dist. in northeastern part of De Soto county voted \$350,000 bonds for schools. (See Fla., Zolfo.)

Fla., Sweetwater.—Special School Sub. Dist. in northeastern part of De Soto county

voted \$350,000 bonds for schools. (See Fla., Zolfo.)

Fla., Tampa.—Tampa Dist. School Trustees asked following architects to submit plans for schools provided in \$225,000 bond issue recently voted: A. L. Shaw, Ybor City school, cost \$30,000; F. J. Kennard, Tampa Heights school, cost \$40,000; Bonfoey & Elliott, Madison St. school, cost \$40,000; F. J. James, building in or near Suburb Beautiful, cost \$25,000; A. H. Johnson, Dobeysville school, cost \$10,000; will also erect \$1200 addition to Hyde Park school for domestic science department; J. B. Anderson, Chrmn. of Trustees. (Lately noted.)

Fla., Zolfo.—Special School Sub. Dist. in northeastern part of De Soto county voted \$350,000 bonds for schools at Zolfo, Avon Park, Sebring, Crewsville and Sweetwater. Address County Commrs., Arcadia, Fla.

Ga., Gainesville.—Brenau College is reported to erect Y. W. C. A. building.

Ga., Newington.—City voted \$3000 school-building bonds; A. J. Carter, Recorder. (Lately noted.)

La., Glenmora.—City plans to vote on tax to erect school; cost about \$35,000. Address The Mayor.

La., New Orleans.—House of Delegates, Baton Rouge, La., passed bill authorizing city to issue \$2,000,000 bonds for schools. (Lately noted.)

Md., Capitol Heights.—Hunter & Bell, Southern Bldg., Washington, D. C., prepared plans for proposed school.

Md., Conowingo.—Cecil County Commrs., Elkton, Md., will erect school. (See Md., Rising Sun.)

Md., Perryville.—Cecil County Commrs., Elkton, Md., will erect \$5000 school. (See Md., Rising Sun.)

Miss., McLaurin.—Forrest County School Board, Hattiesburg, Miss., is reported as probably to erect 2 schools; one at McLaurin to cost \$10,000, other at Helena to cost \$5000 to \$6000; Rev. E. J. Curry, County Supt. of Education, Hattiesburg.

Mo., Moberly.—Moberly School Dist. votes July 21 on \$87,000 bonds to repair school buildings and erect ward building. A. B. Little, Prest. Board of Education.

Md., Rising Sun.—Cecil County Commrs., Elkton, Md., will expend \$15,000 to erect schools at Rising Sun and Conowingo; also erect school at Perryville, Md.

Mo., St. Joseph.—St. James' Catholic Church will remodel building at Michigan and Pryor Aves. for parochial school; rearrange interior, erect brick addition, 30x15 ft., at south end; extend basement, etc.; on second floor; accommodations for 150 students; construction supervised by Rev. J. D. O'Donnell; cost \$5000 to \$7000.

Mo., St. Louis.—City lets contract July 17 to erect 3 buildings for Industrial School for Boys at Bellefontaine Farm; 40x80 ft.; cost \$27,000 each; central portion ordinary construction; dormitory ends fireproof; tile roof; heating plants to cost \$3000 each; lighting not decided; Albert Osburg, Archt., Board of Public Improvements, St. Louis. (Lately noted.)

N. C., Cherryville.—Town is having plans prepared by Hook & Rogers, Charlotte, N. C., for school; sold \$20,000 bonds.

N. C., Samaraud.—C. Hanford Henderson will expend \$5000 to erect open-air school for boys; 150x40 ft.; frame and shingle construction; shingle roof; open flues and steam heat; electric lighting; plans and construction by owner. (Lately noted.)

N. C., Spencer.—City will expend \$12,000 to erect graded school; ordinary construction; brick; metal roof; composition blackboards; electric lighting; steam heat; Sayre & Baldwin, Archts., Blackley Bldg., Anderson, S. C., and Citizens' National Bank Bldg., Raleigh, N. C.; J. W. Stout & Co., Sanford, N. C., and Wilkerson-Moffitt Construction Co., Charlotte, N. C., lowest bidders. (Lately noted.)

Okla., Clarita.—Board of Education, School Dist. No. 27, has plans by Jewell Hicks, Durant, Okla., for school; 2 stories; brick; bids until July 6.

Okla., Dewar.—School Board of Dist. No. 26 will erect addition to school. Address Dist. School Trustees; J. W. Roberts, Archt., Claremore, Okla.; bids opened June 22.

Okla., Stilwell.—Board of Education has plans by C. H. Sudhoelter & Co., Muskogee, Okla., for school; bids until July 5.

Okla., Wilson.—City will soon let contract to erect \$10,000 school, for which bonds were recently voted. Address The Mayor.

S. C., Andrews.—Board of Trustees of Public Schools receives bids until July 15 to erect additions to school according to plans

and specifications by Todd & Benson, Charleston, S. C.; brick and wood; tin roof; stoves; gasoline lighting; cost \$6000; plans on file at office of W. B. Blakeley, Clerk of Board at Andrews.

S. C., Clemson College.—Trustees of Clemson College will make improvements as follows: Erect \$15,000 hospital; convert present hospital into apartment-house; erect \$65,000 Y. M. C. A. building; 50-foot addition to engineering building to cost \$5000; athletic grounds to cost \$2500; establish livestock division at coast experiment station and deepen drainage outlet there; steam laundry at rear of power station, etc.

Tenn., Chattanooga.—University of Chattanooga, Fred W. Hixson, Prest. Board of Trustees, opens bids soon to erect gymnasium; 108x90 ft.; fireproof; slate or tile roof; cost \$40,000; R. G. Deacon, Archt., Chattanooga, to whom proposals may be addressed. (Lately noted to erect woman's building, etc.)

Tenn., Fountain City.—Knox County Commrs., Knoxville, are considering addition of \$15,000 to proposed bond issue to erect school at Fountain City.

Tenn., Manchester.—City will erect school to cost \$6000; J. G. Warden, J. C. Crocker, Edgar McGuire and others, Building Com.

Tenn., Memphis.—Trustees of Goodwyn Institute are having plans prepared by Victor Dunkerly and John Gaisford, Memphis, to remodel and enlarge building; plans call for erection of 4 or 7 stories; 32x70 ft.; will provide store on first floor and offices on second; also remodel auditorium, install steel girders to support roof, increase seating capacity 600 to 1100, enlarge stage, install mirror screen, ventilation system, additional exits, fire escapes, etc.

Tex., Dallas.—Mt. Auburn School Dist. petitioned Dallas County Commrs. for authority to vote on \$16,500 bonds to erect school. Address District School Trustees.

Tex., El Paso.—Board of Regents, University of Texas, J. W. Graham, Chrmn., Austin, will remodel building for school of mines and metallurgy; ordinary construction; tin roof; cost \$5000 to \$8000. Address W. S. Worrell, Dean.

Tex., Fort Worth.—Bedford School Dist. No. 3 will vote Aug. 1 on \$5000 bonds to erect school; brick, reinforced concrete or stone. Address Dist. School Trustees.

Tex., Galveston.—School Board receives bids for alterations and annex to East End Colored School; plans and specifications at office A. J. Bellis, Archt., 1403 23d St., Galveston.

Tex., Harrisburg.—L. L. Pugh, County School Supt., Houston, receives bids until July 15 to erect school at Brookline on Telephone Rd.; 1 story and basement; 2 recitation-rooms and auditorium on first floor; brick; stucco trimmings; slate roof; cost \$9000; also addition at Harrisburg school; 2 stories and basement; steam heat; reinforced concrete footings; slate roof; cost about \$8000; and addition to frame building at Harrisburg; will erect Hollywood school; 3 stories; 6 rooms; brick; cost \$10,000; also two 2-room brick buildings of reinforced concrete trimmed in stucco and to cost approximately \$4500 each. Plans and specifications by F. S. Glover & Son, Archts., 605 Blinz Bldg., Houston. (Lately noted.)

Tex., Liberty.—Trustees of School Dist. No. 13, Liberty county, receive bids at office of Lane & Dowdy, Houston, until July 17 to erect 2-story brick school; plans and specifications from architects.

Tex., Roaring Springs.—School Board will erect 2-story brick school building according to plans by R. S. Glenn, Box 317, Wichita Falls, Tex.; bids received until July 10.

Tex., Texarkana.—City voted \$20,000 bonds to erect school. Address The Mayor. (Lately noted.)

W. Va., Williamson.—City voted \$150,000 bonds to erect school, etc. C. L. Murray may be addressed. (See Miscellaneous Enterprises.)

W. Va., Gatewood.—Board of Education, Fayetteville School Dist., A. A. Hedrick, Dist. Supt., Mt. Hope, W. Va., opens bids July 18 to erect schools near Gatewood and at Pax; former 26x32 ft.; 4 rooms; frame; metal roof; cost \$3000; stoves to cost \$200; latter 24x32 ft.; 6 rooms; frame; metal shingle roof; cost \$5000; jacketed stoves to cost \$300; T. T. H. Snyder, Archt., Mt. Hope, W. Va. (Lately noted.)

W. Va., Keyser.—State Board of Control of West Virginia, J. S. Lakin, Prest., receives bids until Aug. 1 to furnish materials and erect at Preparatory Branch of West Virginia University 2-story and basement dormitory of brick and reinforced concrete; 250 ft. long; accommodations for 120 students; plans on file at office of Board at

Charleston, W. Va.; Cumberland News, Cumberland, Md.; Preparatory Branch, West Virginia University, Keyser; Fairmont West Virginian, Fairmont, W. Va.

W. Va., Logan.—Board of Education, Chas. Avis, Secy., has plans by C. C. Weber, Mercantile Library Bldg., Cincinnati, for school; 8 classrooms, 1 room each for manual training, domestic science, laboratory, gymnasium, etc.; cost \$20,000; ordinary construction; slate or tile roof; mechanical heating and ventilating to cost \$4000; date of opening bids not set. (Lately noted.)

W. Va., Lost Creek.—Grant School Dist. voted \$9000 bonds to erect school at Lost Creek. Address Dist. School Trustees.

W. Va., Mt. Hope.—Board of Education, Fayetteville Dist., A. A. Hedrick, Dist. Supt., opens bids July 18 to erect 10-room school building; 22x31 ft.; brick; cost \$12,000; steam heat to cost \$3000; electric lighting; T. H. Snyder, Archt., Mt. Hope. (Lately noted.)

W. Va., Morgantown.—Board of Education accepted plans by Chas. W. Bates, Wheeling, W. Va., for high school to cost \$150,000. (Previously noted.)

W. Va., Simpson.—Board of Education of Courthouse Dist. will erect high school.

## STORES

Ala., Birmingham.—Birmingham Athletic Club is reported to erect building for dormitory, stores, offices, etc. (See Miscellaneous.)

Ala., Birmingham.—William Leslie Welton is reported to erect several stores and 20-room hotel at 2d Al. and 24th St.; cost \$20,000.

Ala., Lincoln.—J. H. & W. C. Wilson have plans by Ben Price, 518 Empire Bldg., Birmingham, Ala., for store and bank building; 27x94 ft. and 25x50 ft.; 1 and 2 stories; ordinary construction; Carey's or Barrett's specification roof; hand-power freight elevator; day labor.

Ark., Little Rock.—Herman Kahn acquired building at 604-06 Main St. and will remodel.

D. C., Washington.—King's Palace Department Store, 810-16 7th St. N. W., will rebuild structure lately burned.

Fla., Fort Myers.—A. F. and A. M. are reported to erect building for stores, offices and lodge. (See Association and Fraternal.)

Fla., Jacksonville.—W. A. Macduff is having plans prepared by W. B. Camp, Jacksonville, for business block to be occupied by Jones Bros. Furniture Co.; 6 stories; fireproof; reinforced concrete; exterior of buff pressed brick with granite and glazed white terra-cotta trimmings; inverted lighting system; steam heat; passenger and freight elevators; first floor interior finished in fumed finish quartered oak. (Lately noted.)

Fla., Plant City.—S. E. Mays will erect store building; brick; 92x105 ft.

Fla., Starke.—A. H. Johns contemplates improvements to store building.

Fla., Starke.—J. M. Alvarez contemplates improvements to store building.

Fla., Starke.—J. W. Morgan will install front in 1-story building; 26 ft. wide.

Fla., Starke.—N. T. Ritch contemplates improvements to store building.

Fla., Tampa.—Mutual Realty & Investment Co. will erect 3 business buildings at Florida Ave. and Cass St.; 4 stories; construction to permit erection of 2 additional stories later.

Ga., Atlanta.—Lee Tile & Construction Co. has plans by H. E. Marshall, care of S. A. Williams Lumber Co., Atlanta, for building; 40x100 ft.; cost \$5000; ordinary construction; 3-ply rubberoid roofing; steam heat to cost \$500; elevator \$800; day labor. (Lately noted.)

Ga., Savannah.—Lee Chemical Co., Albany, Ga., will erect building on Charles La.

Ky., Hindman.—Smith & Combs have about completed store and office building lately noted to cost \$30,000.

La., New Orleans.—Mrs. Anna Davis and others are reported to expend \$15,000 for alterations to building at St. Charles St.

La., New Orleans.—Metropolitan Improvement Co. will erect department store, etc. (See Hotels.)

Miss., Waynesboro.—Fagan-Peel Co. let contract to erect building for store, bank, offices and theater. (See Bank and Office.)

Mo., Kansas City.—John A. Ford will erect business building; 3 stories; brick and stone; cost \$11,000.

Mo., St. Joseph.—Huber estate has plans by Eckel & Aldrich, Commercial National Bank Bldg., St. Joseph, for building; one story; 86x80 ft.; red tapestry brick; green

tile cornice with copper finish; 4 stories; construction to provide for 2 additional stories; cost \$15,000.

Mo., St. Louis.—Fredonia Realty Co. will erect building on Locust St., to be occupied by Fisk Rubber Co.; 50x155 ft.

N. C., Hickory.—P. C. Hahn has plans by Q. E. Herman, Hickory, for 2 store buildings; 2 stories and basement; 32x50 ft.; reinforced concrete floors; cost \$8000.

N. C., Middlesex.—High Bros. will rebuild store reported burned; 25x100 ft.; ordinary brick construction; composition or tin roof; cost \$6000; elevator, \$200; construction to begin in Sept.

N. C., Rocky Mount.—Rudolph Shaloski, Spartanburg, S. C., is having plans prepared for store and office building at Main and Depot Sts.; 86x90 ft.; lower floor for 3 stores; upper floor for 15 offices; cost \$15,000.

Okla., Tulsa.—C. Larsen will erect 3-story brick building on Brady St.; cost \$12,500.

Okla., Tulsa.—Hunt-Riddick Dry Goods Co., Dan Hunt, Prop., is reported to erect building on S. Main St.; 3 stories; cost \$30,000.

S. C., Columbia.—Bank of Columbia will remodel building, provide store, etc. (See Bank and Office.)

S. C., Greenville.—A. L. Mills and Hudson Williams are reported having plans prepared by Martin & Andrews, Greenville, to remodel Raser & Joyce Bldg. on E. Washington St.; plate-glass windows in front; cost several thousand dollars.

Tenn., Chattanooga.—Chattanooga Trust Co. is having plans prepared by W. H. Sears, Chattanooga, for 3 stores.

Tenn., Chattanooga.—Chattanooga Trust Co. has plans by W. H. Sears, Chattanooga, for 3 stores; 60x60 ft.; ordinary construction; bids opened about July 6.

Tenn., Memphis.—Boyle & Boyle will expend \$5000 to repair building at 141 S. Front St.

Tenn., Memphis.—J. O. Robinson will expend \$10,000 to remodel building at 22 N. 2d St.

Tenn., Memphis.—Jacob Evans will erect addition to building at 175 S. Main St.; cost \$12,000.

Tenn., Morristown.—W. C. Hale will erect 3-story brick business building on Henry St.

Tenn., Nashville.—Dr. G. C. Savage is reported to erect office building for store, etc. (See Bank and Office.)

Tenn., Nashville.—W. H. Tate will erect brick-veneer store at 1502 18th Ave.; cost \$6000.

Tex., Dallas.—Tom Angus will remodel building at 1612 Main St.; cost \$4000.

Tex., Fort Worth.—Milton L. Eppstein will erect brick store building at 1st and Main Sts.; cost \$3000.

Tex., Galveston.—Estate of Theo. Strauss will erect 2-story brick store and apartment-house; cost \$10,000.

Va., Richmond.—C. F. Steinmann will remodel frame store at 2524 Venable St.; cost \$2055.

Va., Tazewell.—J. A. Greevar has plans by J. C. Heldorth, Tazewell, for store; 55x165 ft.; mill construction; metal or asphalt roofing; steam heat; cost \$20,000; let sub-contracts. (Lately noted.)

W. Va., Charleston.—Mrs. A. Boirasky has plans by Weber, Werner & Adkins, Cincinnati, O., for store and office building on Kanawha St.; brick and concrete; 3 stories; cost \$60,000.

W. Va., Charleston.—Harrison B. Smith is receiving subbids to rebuild and erect addition to store building on Hale St. near Washington St.; brick; fireproof; cost \$32,000.

W. Va., Charleston.—S. A. Moore will erect store and office building on State St.; cost \$35,000.

W. Va., Charleston.—John L. Thornhill will erect business and office building; 3 stories; brick; 22x100 ft.; cost \$10,000.

W. Va., Dunbar.—James White has plans for business building.

W. Va., Dunbar.—V. H. and J. W. Odell, Richwood, W. Va., will erect several business buildings; brick construction.

W. Va., Parkersburg.—Martin-Nelly Co. has plans by Theo. T. Sansbury, Parkersburg, for building; brick; slow-burning construction; 130x158 ft.; 5-ply built-up roofing; cost \$60,000; install freight elevator, 3500 lbs. capacity; no bids; owner will erect. (Previously noted.)

## THEATERS

Ark., Little Rock.—Chas. T. Abeles and Theodore Abeles will erect moving-picture



theater at Main and 8th Sts. to be leased to Jas. R. Carter, Mgr. of Crystal Theater; steel and concrete; fireproof; seating capacity at least \$1000.

Ky., Morganfield.—H. M. Harris will receive bids to remodel Bowen Bldg. for moving-picture theater; plans and specifications on file at Capital Hotel.

Tenn., Chattanooga.—C. H. Royalty, Hamilton Bank Bldg., engaged E. J. Henderson, 107 W. 6th St., Chattanooga, to superintend remodeling building for theater; 70x200 ft. and 20x100 ft.; fireproof and mill construction; Carey or granite roof; air-cooling plant; electric lighting; cost \$20,010; Snoddy & Bull, Architects, James Bldg., Chattanooga; subcontracts will include concrete and 4000 ft. steel and brick work. (Lyric Co. lately reported letting contract to Mr. Henderson.)

Tenn., Memphis.—J. D. Nathan will erect air dome on Bellevue Blvd. to replace theater; sliding roof; plans by G. M. Shaw, Tennessee Trust Bldg., Memphis.

Tex., Austin.—Eugene Tips, Ernest Nalle, Wilbur Allen and others are reported interested in erection of theater at 7th and Brazos Sts.; cost about \$90,000.

Tex., Austin.—J. P. Lightfoot is reported promoting company to erect theater, etc. (See Hotels.)

Tex., Fort Worth.—Phillips Amusement Co. will erect 2-story brick theater; cost \$20,000.

### WAREHOUSES

Ark., Little Rock.—Lesser-Goldman Cotton Co., 2d and Cumberland Sts., Ad Hemberger, Mgr., will rebuild storehouses, yards, etc.,

reported burned at loss (on building and equipment) of \$12,000.

Fla., Jacksonville.—Peninsular Metal Co. will erect 1-story galvanized-iron warehouse on E. Bay St.

Ky., Corydon.—Corydon Milling Co. is erecting warehouse; 1 story and basement; 60x120 ft.; iron-clad; composition roof; capacity 30,000 bus. storage. (See Flour, Feed and Meal Mills.)

Md., Baltimore.—Baltimore Mfg. Co. contemplates rebuilding warehouse; plans not made. (Lately reported burned at loss of \$10,000.)

Mo., Joplin.—Standard Oil Co., 26 Broadway, New York, is reported to erect warehouse and stable on Missouri Ave.; site 160x120 ft.; W. A. Judd, representative, Kansas City, Mo.

Okla., Tulsa.—Oil Well Supply Co. is reported to erect office building and warehouse. (See Bank and Office.)

S. C., Columbia.—Standard Warehouse Co., T. B. Stackhouse, Pres., 900 National Loan & Exchange Bank Bldg., has plans by Shand Engineering Co., Columbia, for warehouse; storage capacity 10,000 bales; cost \$40,000.

Tenn., Memphis.—Southern Cotton Oil Co. will erect seed shed on Southern Ave.; cost \$15,000.

Tex., Belton.—Texas Light & Power Co. will erect office building and warehouse, etc., on Central Ave.

Tex., El Paso.—J. S. Morris will erect warehouse at Dallas and Texas Sts.; cost \$7000.

Tex., Galveston.—Wiley, Nicholls & Co. will erect warehouse at 35th and Postoffice Sts.; concrete; cost \$50,000.

## BUILDING CONTRACTS AWARDED

### APARTMENT-HOUSES

Ala., Birmingham.—J. Mercer Barnett let contract to Joy-Marriott Construction Co., Birmingham, to erect apartment-house at Highland Ave. & Cleveland St.; 3 stories; 12 five-room suites; brick; white stone trimmings; tapestry brick finish; cost \$40,000.

Ala., Birmingham.—Carroll Blake Construction Co., 1617 American Trust Bldg., Birmingham, Gen. Contr. for Steiner Bros. apartment-house, let following subcontracts: Reed Bros., stone work; P. & F. Tile Co., marble, etc.; R. A. McLeod, plastering; Sprig Roofing & Heating Co., roofing and sheet metal; Jefferson Brick Supply Co., building supplies; Barnett Lumber Co., lumber; Peerless Lumber & Mfg. Co., mill work; Hynds-Upshaw Paint & Glass Co., painting; Brewer & Scanlan, metal windows; all of Birmingham; Price-Evans Foundry Co., Chattanooga, Tenn., iron work; cost \$65,000; Harry B. Wheelock, Archt., Birmingham. (Lately noted.)

Ga., Atlanta.—Mackie-Crawford Construction Co., Atlanta, has contract to erect apartment-house; 3 stories; 12 suites; cost \$30,000; A. N. Canton, Archt., Atlanta.

Mo., St. Louis.—Blanche Wagner let contract to H. Dilschneider, St. Louis, to erect 2-story tenement-house at 4144-46 Farlin St.; cost \$5300.

Mo., St. Louis.—C. Sloninski let contract to F. Haselbrock, St. Louis, to erect tenement at 4618 Virginia Ave.; 2 stories; cost \$4400.

Mo., St. Louis.—F. J. Dougherty let contract to J. E. Dougherty, St. Louis, to erect 2 two-story tenement-houses at 2552-54 S. 13th St.; cost \$6600.

Mo., St. Louis.—Louisa Freck let contract to erect 2-story tenement-house at 2135 Allen St.; cost \$4600.

Mo., St. Louis.—A. Uthoff let contract to A. L. Waass, St. Louis, to erect 2-story tenement-house at 3947-49 Shaw St.; cost \$4500.

Mo., St. Louis.—J. Smalley let contract to J. Strouss, St. Louis, to erect 2-story tenement-house at 3519 Louisiana St.; cost \$3500.

Mo., St. Louis.—Miss L. Franke let contract to B. J. Charleyville, St. Louis, to erect 3-story tenement-house at 5789 Berlin St.; cost \$7500.

Mo., St. Louis.—Miss L. Pins let contract to L. Chaney, St. Louis, to erect 2-story tenement-house at 2240 Pope St.; cost \$4200.

Mo., St. Louis.—Della Epstein let contract to Wm. Ferris, St. Louis, to erect 3-story tenement and 1-story garage at 5142 Waterman Ave.; cost \$15,400.

Mo., St. Louis.—H. Rohrbach let contract to Faverre Bros., St. Louis, to erect 2-story tenement-house at 3624-28 Arsenal St.; cost \$14,000.

Mo., St. Louis.—J. Longo let contract to A. Burgadler, St. Louis, to erect 2-story tenement at 1950 Burd St.; cost \$3800.

Mo., St. Louis.—Wm. Benz let contract to H. Roseman, St. Louis, to erect 2-story tenement-house at 4114 Clay St.; cost \$4700.

Tex., Houston.—Mrs. A. L. Barry let contract to H. M. Hamilton, Houston, to erect apartment-house; 3 stories; 38x65 ft.; six 4-room suites; tin roof; steam heat; electric lights; cost \$18,000; Adrian DeLisle, Archt., 704½ Main St., Houston. (Lately noted.)

### ASSOCIATION AND FRATERNAL

La., Lake Charles.—B. P. O. E. let contract to A. A. See, Lake Charles, to remodel building; will enlarge natatorium to 56 ft. long and from 30 to 40 ft. wide; drill artesian well to supply water for swimming pool and shower baths; erect additional story in rear.

Tenn., Coal Creek.—Weldon Lodge, No. 181, I. O. O. F., let contract at \$6550 to T. H. Lelart, Clifton, Tenn., to erect opera house and lodge building; 40x50 ft.; 2 stories; brick. (Lately noted.)

Tex., McKinney.—W. O. W. Lodge let contract to L. M. Miller, McKinney, to erect building; 2 stories; brick and concrete; 50x80 ft.; lower floor for stores; upper floor, lodge-rooms; cost \$10,000. (Lately noted.)

### BANK AND OFFICE

Ala., Bessemer.—Bessemer Realty Co. (W. J. Long and others) let contract to Ager & Cline, Birmingham, Ala., to erect office and store building; 115x100 ft.; cost (without mechanical equipment) \$85,000; fireproof reinforced concrete; concrete-covered slate roof with pitch and gravel; steam heat; electric lighting; concrete sidewalks; 2 passenger elevators; W. E. Bennis, Archt., Bessemer. (Lately noted.)

Fla., Jacksonville.—Citizens' Bank is reported to have let contract to J. C. Pritchard, Jacksonville, to erect 1-story brick building.

Ga., Albany.—J. S. Smith let contract to erect store and office building. (See Stores.)

Md., Baltimore.—Julian LeRoy White let contract to John Waters, 23 E. Center St., Baltimore, to erect additional story to building at 119-21 E. Baltimore St. to be occupied by Westinghouse Electric Co.

Miss., Waynesboro.—Fagan-Peel Co. has plans by and let contract to P. V. Carson, Meridian, Miss., to erect building for store, theater, office and bank; 108x80 ft.; brick and concrete; plate glass; gravel roof; electric lighting; cost \$10,000; lately noted. (See Machinery Wanted.)

N. C., Burlington.—Jos. A. Insley & Bros. Co. let contract to erect office and store building. (See Stores.)

Okla., Bartlesville.—Sutton-Keeler Co. let following subcontracts through McGregor & Hingle, Gen. Contrs., Bartlesville, for bank and office building: Mendell Hardware Co., heating and plumbing; electric wiring, Sun Electric Co., both of Bartlesville; terracotta, Kansas City (Mo.) Terra-Cotta & Faience Co.; structural steel, J. B. Klein &

Co., Oklahoma City; reinforcing steel, Corrugated Bar Co., Buffalo, N. Y.; mill work, marble and metal window contracts not let. (Lately noted to cost \$90,000.)

Okla., Okmulgee.—P. K. Morton, Box 67, has plans for office and store building. (See Stores.)

W. Va., Wheeling.—Quarter Savings Bank let contracts for bank building as follows: Brick and cement work, W. R. Dudley; carpenter work, Klieves Lumber Co.; plastering, W. A. Stoetzer; painting and glazing, Schenckel & Pracht, all of Wheeling; fireproof structure; 3 stories; 2 stores on ground floor; floor for offices; Fred Faris, Archt., Wheeling. (Lately noted.)

### CHURCHES

Md., Baltimore.—St. Jerome's Catholic Church, Rev. Jas. P. Holden, Pastor, will expend \$85,000 to \$100,000 to erect building; 79x139 ft.; ordinary masonry construction; slate roof; P. E. Tormey, Archt., 813 Newington Ave., Baltimore; cut stone contract, \$30,000; general contract (lately noted) let to Monmonier & Sorrell, 1711 McCulloh St., Baltimore.

Md., Baltimore.—Chapel of Advent P. E. Church let contract to C. Smith, 903 N. Woodyear St., Baltimore, to erect building on Charles St. near Ostend St.; one story; 80x132 ft.; stone, brick and cement; slate roof; steam heat; cost \$35,000; Watson & Huckel, Architects, 1211 Walnut St., Philadelphia. (Previously noted.)

Miss., Drew.—M. E. Church, South, Rev. J. W. Raper, pastor, let contract to C. Y. McLeod, Drew, to erect building; 60x100 ft.; cost \$12,000; ordinary construction; slate roof; steam heat; electric lighting; Alsop & Kuehnaffel, Architects, West Point, Miss. (Lately noted.)

Mo., St. Louis.—Church of the Blessed Sacrament, 5015 Northland St., let contract to P. H. Bradley to erect church building and parsonage; cost \$45,000.

Mo., St. Louis.—Presbyterian church let contract to I. Segel, St. Louis, to erect addition to church; cost \$6500.

Tenn., Fish Spring.—Baptist Church let contract to J. L. Jaynes, Johnson City, Tenn., to erect building; brick; cost \$7000; C. G. Mitchell, Archt., Johnson City, Tenn. (Previously noted.)

Tex., Waco.—German Evangelical Zion Church, Rev. F. Hempleman, pastor, let contract to Bush & Simons, Waco, to erect building at 625 S. 8th St.; cost, exclusive of furnishings, \$10,000; E. H. Reed, Archt., Waco.

### CITY AND COUNTY

Md., Baltimore.—Comfort Station, etc.—City let contract at \$15,789.84 to P. J. Cushen, 217-19 St. Paul St., Baltimore, to erect comfort station at Louisiana Ave. and Jasper St.; semi-fireproof; tile and slag roof; steam heat; electric lighting; Thos. C. Kennedy, Archt., 211 N. Calvert St., Baltimore; also let contract at \$2407 to Charles W. Grant, 217-19 St. Paul St., Baltimore, to paint exterior of Richmond Market. (Lately noted.)

N. C., Charlotte.—Jail.—Mecklenburg County Commrs. let following sub-contracts through J. A. Jones, Gen. Contr., 404 Realty Bldg., Charlotte, for jail: T. C. Toomey Co., Charlotte, plumbing and heating; Hornet-nest Electric Co., Charlotte, electric wiring; Van Dorn Iron Works, Cleveland, O., cell-work; L. G. Cruise, Charlotte, painting. (Lately noted.)

Tex., Dallas.—Animal House.—City let contract to John M. Martin & Son, Dallas, to erect animal house at Forest Park Zoo; Long & Mitchell, Architects, Dallas. (Lately noted to cost \$3425.)

### COURTHOUSES

Okla., Madill.—Marshall County Commrs. let contract at \$70,960 to Rooney & Culp, Muskogee, Okla., to erect courthouse; 82x59 ft.; fireproof; reinforced concrete; Johns-Manville roofing; steam heat. (Lately noted.)

Tex., Falfurrias.—Brooks county let contract to Westlake & Mizell Co., San Antonio, Tex., at \$54,490 to erect courthouse; Alfred Giles, Archt., San Antonio. (Lately noted.)

### DWELLINGS

Ala., Selma.—Benj. Tepper let contract to Thos. Purvis, Selma, to erect residence; 2 stories and basement; ordinary brick-veneer construction; asbestos slate roof; cost \$7500; J. W. McKell, Archt.

D. C., Washington.—W. G. Platt let contract to B. R. Hardesty, 1247 B St. S. E.,

Washington, to erect residence at 5631 Colorado Ave. N. W.; cost \$4000; plans by E. N. Hamilton, 944 K St. N. W., Washington.

Fla., Miami.—W. S. Gramling let contract to Magin & Luke, Miami, to erect dwelling at Ocean Beach; 32x45 ft.; cost \$4000; reinforced concrete; open fireplaces; electric lighting. (Lately noted.)

Fla., Miami.—E. G. Reynolds, Buena Vista, Fla., let contract to W. E. Martin, Miami, to erect dwelling; 37x32 ft.; 10-ft. porch; mill construction; cedar shingle roof; cost \$4500 to \$5000; sub-contracts include plumbing, plastering and painting. (Lately noted at Buena Vista, Fla.)

Ga., Albany.—W. A. Bierman has plans by and let contract to U. L. Weston, Albany, to erect residence; 39x55 ft.; frame; galvanized shingle roof; cost \$3000. (Lately noted.)

Ga., Atlanta.—A. B. Turner let contract to H. J. Carr & Co., Atlanta, to erect dwelling at 69 Penn Ave.; 2 stories; cost \$5000.

Ga., Augusta.—Mrs. Henry C. Tinker, Long Island, New York, will expend \$24,000 to erect dwelling on Milledge Rd.; 40x70 ft.; slate roof; hot-water heat to cost \$1500; electric lighting, \$400; H. P. White, Archt., Boston, Mass.; contract (lately noted) let to C. B. Holley, Augusta.

Fla., West Palm Beach.—L. S. Watkins let contract to E. M. Botts, West Palm Beach, to erect residence; 2 stories; cement porch; H. C. Bartholomew, Archt., West Palm Beach.

Ga., Decatur.—P. B. Orr let contract to W. H. S. Hamilton, Decatur, to erect residence; 1 story; frame; stone foundation; composition slate shingles; hardwood floors; electric lights; Lella Ross Wilburn, Archt., Peters Bldg., Atlanta.

Ky., Lexington.—Talbert Clay let contract to Williamson & Son, Lexington, to erect residence in Bell Court, East; cost \$3000.

Ky., Winchester.—Albert Stoeffer let contract to Ward Stevenson, Winchester, to erect residence on Mt. Sterling pike; cost about \$8000; 44x37 ft.; brick and wood; shingle roof; hot-water heat; electric lighting to cost \$200; sub-contracts include heating, electric fixtures, mantles, etc.

Md., Baltimore.—Roman Harris let contract to erect store and dwelling. (See Stores.)

Md., Baltimore.—Dr. John Howland, 20 E. Eager St., is having plans prepared by L. H. Fowler, 347 N. Charles St., Baltimore, for residence at Guilford; 2½ stories; brick; 71x41 ft.; cost \$15,000; Geo. R. Morris, Contr., Gunther Bldg., Baltimore.

Md., Baltimore.—Wm. C. Frederick, 1224 Greenmount Ave., let contract to Gladfelter & Chambers, 2074 Woodberry Ave., Baltimore, to erect residence on Lake Front Drive; hollow tile construction; stucco trimmings; colonial style; A. Lowther Forrest, Archt., 11 E. Lexington St., Baltimore. (Lately noted.)

Md., Baltimore.—Mrs. E. L. Tunis, 29 Clifton Ave., let contract to Chas. Zimmerman to rebuild burned residence at Windsor Hills; brick and stone; cost \$4500.

Md., Baltimore.—Mrs. A. R. Preston let contract to Gladfelter & Chambers, 2074 Woodberry Ave., Baltimore, to erect residence on University Parkway near Kittery Lane; 2½ stories; frame and stucco; cost \$5500; E. L. Palmer, Jr., Archt., 408 Roland Ave., Roland Park, Md.

Md., Catonsville.—Mrs. Robert Taylor let contract to I. S. Getchell to erect \$5000 cottage on St. Timothy's lane; 2 stories; frame.

Md., Woodlawn.—C. F. Emmart, 3011 Windsor Ave., Baltimore, Md., let contract to Edw. Wideman to erect 2 frame dwellings on Ashman Ave.; cost \$5000.

Miss., Biloxi.—S. Tedesco let contract to Briggs & Dayhuff, Biloxi, to erect 2-story residence on Magnolia St.

Mo., Clayton.—Chas. M. Rice let contract to W. M. Sutherland Building & Construction Co., 7th and Chestnut Sts., St. Louis, to erect stone dwelling; 70x35 ft.; cost \$30,000; LaBeaume & Klein, Architects, Chemical Bldg., St. Louis.

Mo., St. Louis.—Church of the Blessed Sacrament, 5015 Northland St., let contract to erect parsonage, etc. (See Churches.)

Mo., St. Louis.—J. B. Wilson let contract to J. M. Dunham & Co., St. Louis, to erect 2-story dwelling at 1040 Thornby St.; cost \$8000.

Mo., St. Louis.—Catherine Investment Co. let contract to A. Winkel to erect 3 dwellings; 38x54 ft.; ordinary construction; slate roof; hot-air heat; electric wiring; cost \$18,000; E. Preisler, Archt., 918 Pine St., St. Louis. (Lately noted.)

Mo., St. Louis.—F. L. Dittmeier let contract to J. Hartman, St. Louis, to erect 2-

story dwelling at 5827 N. Market St., and to B. Parsons, St. Louis, to erect 2-story dwelling at 4206 Holly St.; cost \$6500.

Mo., St. Louis.—N. Jarzenski let contract to B. Parsons, St. Louis, to erect 2-story dwelling at 7023 Berthold St.; cost \$3500.

Mo., St. Louis.—John Doyle let contract to Casey & O'Keefe, St. Louis, to erect 2-story dwelling at 6553 Westminster St.; cost \$6000.

Mo., University, Sta. St. Louis.—Rose Hahn let contract to Frank Kraber, 4106 Nebraska Ave., St. Louis, to erect brick dwelling; 23x46 ft.; cost \$4500.

N. C., Statesville.—J. E. Heinzerling let contract to erect residence on Tradd St.

Tenn., Jonesboro.—J. M. Fink let contract to J. L. Jaynes, Johnson City, Tenn., to erect \$6000 residence.

Tenn., Jonesboro.—A. L. Shipley let contract to J. L. Jaynes, Johnson City, Tenn., to erect \$6000 brick-veneer residence.

Tenn., Nashville.—W. M. Starnes let contract to erect dwelling in Richland Addition; first story, tapestry brick; second, stucco and half timber; tile roof; laundry; garage; steam heat; cost about \$15,000; Marr & Holman, Architects, Nashville.

Tex., Lockhart.—R. Warshawski let contract to erect brick-veneer cottage.

Tex., Plainview.—T. B. Campbell will expend \$6000 to erect dwelling; shingle roof; hot-water heat; electric lighting; J. C. Goodwin, Archt.; contract (lately noted) let to J. B. Maxey, Plainview.

W. Va., Dunbar.—Wm. Lee, Charleston, W. Va., let contract to erect 2-story frame dwelling.

W. Va., Wheeling.—H. W. Taylor, Stone Church Rd., is reported to have let contract to erect dwelling on Elm Heights.

Va., Norfolk.—Ralph Kanter let following subcontracts to erect \$8000 dwelling: Veasey & Sykes, at \$1800, for brick; Columbia Stove Co., \$350, roof; Wilson & Co., Norfolk, \$412, plumbing; Norfolk Building Supply Co., Norfolk, \$400, sash, doors and blinds; R. L. Davis, painting; general contract (lately noted) S. D. Brown, 335 Arcade Bldg., Norfolk; Louis R. Moss, Archt., National Bank of Commerce Bldg., Norfolk.

Va., Norfolk.—L. P. Roberts will erect 2-story frame residence on Redgate Ave.; cost \$3300; 9 rooms; slate roof; hot-air heat; electric lighting; contract let to B. L. Nichols, Norfolk.

Va., Richmond.—W. F. Drinkard let contract to J. A. Browning to erect dwelling; 8 rooms; tin roof; cost \$4000; heating plant, \$375; lighting, \$175; Childrey & Co., Archts., 7th and Franklin Sts., Richmond. (Lately noted.)

W. Va., Parkersburg.—J. McC. Martin let contract to S. M. Carter, Parkersburg, to erect residence; frame; 8 rooms. (Lately noted.)

## GOVERNMENT AND STATE

Ala., Mobile.—Postoffice.—Treasury Dept., Oscar Wenderoth, Supervising Archt., Washington, D. C., is reported to have let contract at \$268,000 to erect postoffice building; 2 stories and basement; 1-story rear extension; Alabama marble; ornamental terracotta and stucco facing; 18,000 sq. ft. ground area; fireproof; copper and tile roof. (Previously noted.)

Md., Crisfield.—Postoffice.—Max Saltz let contract to F. B. Hobson, Crisfield, to erect building for postoffice and custom-house; 28x62 ft.; slate roof; metal ceiling; hot-water heat; steel beams for front and second-story joist; plate glass front.

N. C., Tarboro.—Postoffice.—Treasury Dept., Oscar Wenderoth, Supervising Archt., Washington, D. C., will expend \$50,000 (cost without mechanical equipment) to erect postoffice; 3800 sq. ft.; fireproof; tin roof; steam heat to cost \$2000; electric lighting \$1500; general contract (lately noted) let to R. P. Farnsworth & Co., Owensboro, Ky.; let contract to Bedford Steam Stone Works, Bedford, Ind., for stone; J. E. Smith, Mt. Airy, granite. (See Machinery Wanted.)

## HOTELS

Miss., Clarksdale.—King & Anderson let subcontracts through Ferro-Concrete Construction Co., general contractor, Cincinnati, to erect Alcazar Hotel annex: Glazing, Pittsburgh Plate Glass Co., Pittsburgh, Pa.; iron work, Chickasaw Iron Works, Memphis, Tenn.; metal windows, Akers Fire Protection Co., Memphis, Tenn.; mill work, Enoch Lumber Co., Jackson, Miss.; painting, E. L. Dinning, Memphis; roofing, Bartholomew Roofing Co., Memphis; marble and tile work, Central Mosaic & Tile Co., Memphis; total

cost \$100,000; C. O. Pfell, Archt., Memphis. (Other subcontracts lately noted.)

W. Va., Dunbar.—Sol Cohen let contract to erect hotel; 3 stories; frame; lower floor for stores.

## MISCELLANEOUS

Ala., Tuscaloosa.—Clubhouse.—S. A. E. Fraternity will expend \$7000 to erect clubhouse and dormitory; 33x57 ft.; 2 stories; ordinary construction; shingle roof; cost of heating plant, \$900; A. B. Witten, Archt., Mobile. Contract (lately noted) let to C. M. Ayres, Tuscaloosa.

S. C., Florence.—Stables.—W. B. Boyle & Co. let contract to erect stables and store. (See Stores.)

S. C., Rock Hill.—Fair.—Rock Hill Fair Assn. let contract to C. A. Dobbins to erect exhibit hall 100x32 ft.; to L. A. Pope, Rock Hill, to erect grandstand 100x20 ft., 22 ft. high; will also erect cattle and horse sheds 300 ft. long, hog sheds, poultry buildings, etc.

## RAILWAY STATIONS, SHEDS, ETC.

Tex., Dallas.—Union Terminal Co., C. H. Dana, Ch. Engr., let contract to John W. Thompson, Wainwright Bldg., St. Louis, to erect union passenger station and terminal at cost of about \$5,000,000; main building 22x135 ft.; Italian renaissance style; solid rock foundation; Texas granite base; upper portion brick; Jarvis Hunt, Archt., 53 W. Jackson Blvd., Chicago; reported to have let subcontract to Hughes-O'Rourke Construction Co., Dallas. (Lately fully detailed.)

## SCHOOLS

Ala., Greensboro.—Southern University is reported to have let contract at \$23,974 to J. D. Brown, Baton Rouge, La., to erect building; Favrot & Livaudais, Archts., Perrin Bldg., New Orleans.

Ark., Conway.—Board of Education let contract to Courtney & Adams, Conway, to erect 2 annexes to school, and to Home Heating & Plumbing Co., Conway, for plumbing and heating; 60x37 ft. each; cost \$12,000; C. L. Thompson, Archt., Little Rock. (Lately noted.)

Fla., Miami.—Dade County Board of Public Instruction let contract at about \$10,000 and \$9545 respectively to Fleming Construction Co. to erect Riverside and South Side schools according to plans by August Gelger, Miami; Spanish type; red tile roofs. (Lately noted.)

Mo., Holland.—Directors of Consolidated School Dist. No. 1, D. T. Ingram, clerk, let contract to J. L. Thompson, Blytheville, Ark., to erect school building; 2 stories; 5 rooms; brick and concrete; metal shingle roof; Smyth system of heating; cost \$6250; L. B. Walker, Archt., Poplar Bluff, Mo. (See Machinery Wanted.)

Mo., St. Louis.—Board of Education let contract to L. L. Jones to erect addition to school at 2828 Lucas St.; cost \$8000.

N. C., Concord.—City let contract to R. A. Brown, Concord, to erect school building; brick; ordinary construction; metal roof; slate blackboards; electric lighting; steam heat; cost \$15,000; Sayre & Baldwin, Archts., Bleeckley Bldg., Anderson, S. C., and Citizens' National Bank Bldg., Raleigh, N. C. (Lately noted.)

Tenn., Knoxville.—Knox County School Board let contract at \$1451 to J. J. Gillenwater, Knoxville, to erect 2-room school at Bright Hope; at \$950 to J. A. Cox, Knoxville, to recover, paint interior and exterior of Giffin school; at \$1315 to A. R. Ogle, Knoxville, to erect 3-room addition to University Ave. school; opened bids to erect Mead's Quarry school; J. B. Lee, Knoxville, is lowest bidder at \$1348. (Lately noted.)

Tex., Dallas.—Highland Park School Trustees will expend \$18,000 to erect school; 40x75 ft.; semi-fireproof; gravel roof; Lang & Witchell, Archts., Dallas; contract (lately noted) let to Trinity Building Co., Dallas.

Tex., El Paso.—School Board let contract at \$10,576 to Otto P. Kroeger, El Paso, to erect additional story to Highland Park School and at \$793.44 to Stanley Bevan, El Paso, to erect additional story to Alta Vista School; also reported to have let contract to Pennsylvania Natural Slate Blackboard Co., Slatington, Pa., for blackboards. (Lately noted.)

Tex., Galveston.—School Board let contracts at \$27,475 and \$23,675, respectively, to Taylor Building Co., Fort Worth, to erect West End school and Rosenberg school; rejected all bids to remodel Ball High School according to plans by Stowe & Stowe, Galveston. (Lately noted.)

Tex., Hitchcock.—Trustees of Public Schools let contract to Eubanks & Disbree, Galveston, to erect school building; fireproof;

L. S. Green, Archt., Galveston. (Lately noted.)

Tex., Mosheim.—Mosheim School Trustees have plans by and let contract to A. J. Olson, Cisco, Tex., to erect school; 4 rooms; metal shingle roof; cost of heating plant, \$210. (Lately noted.)

Tex., San Antonio.—School Board let contract at \$4500 to Ed Oeffinger, San Antonio, to erect addition to Marshall or Macon St. School; rejected all bids to erect Beacon Hill School; will receive new bids for same; also bids to erect Collins Garden and School No. 17, on Calhoun St., and for steam heating system at Highland Park School and high school on Starr St.; Leo M. J. Diemann, Archt., San Antonio. (Previously noted.)

W. Va., Follansbee.—Board of Education has plans by M. L. Wells (not Willard Wells as lately reported), Wellsburg, W. Va., for school for which general contract was let to A. S. Craig & Co., Follansbee.

W. Va., Morgantown.—Clay Dist. Board of Education, Monongalia county, Harry Brookover, Supt., let contract at \$4985 to W. P. Blair to erect consolidated school building.

## STORES

Ala., Bessemer.—Bessemer Realty Co. (W. J. Long and others) let contract to erect store and office building; lately noted. (See Bank and Office Buildings.)

Ala., Birmingham.—Mrs. H. E. Hewitt let contract to J. E. Allen, Birmingham, to erect building for 5 stores; brick; cost about \$20,000; Miller & Martin, Archts., Birmingham.

Ala., Montgomery.—Hobbs Grocery Co. let contract to Hugger Bros., Montgomery, to erect grocery store; 55x125 ft.; standard construction; 5-ply tar and gravel roof; steam heat; electric lighting; sidewalk lights; 2 freight elevators; cost \$50,000; Frederick Ausfeld, Archt., Montgomery. (Lately noted.)

Ark., Ashdown.—O. Harris let contract to C. C. Smith, Ashdown, to erect 2 brick buildings to replace burned structures.

Ga., Albany.—J. S. Smith let contract to R. S. Smith, Albany, to erect 2-story store and office building.

Ga., Atlanta.—J. G. Oglesby, Jr., let contract to Chas. W. Barnhardt, 191 1/2 Marietta St., Atlanta, to alter store; cost \$10,000; E. C. Wachendorff, Archt., 825 Empire Bldg., Atlanta. (Lately noted.)

Ga., Atlanta.—L. C. Ranglin let contract to J. B. McConnell, Atlanta, to repair building at 409 Washington St.; cost \$3900.

Ga., Atlanta.—M. M. Anderson let contract to C. W. Bernhardt, Atlanta, to remodel building at 24 E. Broad St.; cost \$10,000; E. C. Wachendorff, Archt., Atlanta.

Md., Baltimore.—Purnell Art Co., 309 N. Charles St., will improve building; construct colonial marble and brick front, provide galleries, etc.; Willard E. Harn Co., Contr., 213 N. Calvert St., Baltimore.

Md., Baltimore.—Roman Harris let contract to Jos. Schamberger, 212 E. Baltimore St., Baltimore, to erect store and dwelling at Baltimore and Frederick Sts.; 33x66 ft.; cost \$13,000; Louis Levi, Archt., Real Estate Trust Bldg., Philadelphia. (Lately noted.)

Md., Forest Hill.—E. Tucker & Co. let contract to Love Bros., Belair, Md., to erect store; 50x100 ft.; slate roof; cost \$7212; Stubbs & Culp, Archts., Delta, Pa. (Lately noted.)

Mo., Kansas City.—Southside Investment Co., 1065 Waldheim Bldg., let contract to Selden-Breck Construction Co., St. Louis, Mo., to erect store building; 1 story, with carrying capacity for 5 additional stories; 387x92 ft.; fireproof; cost \$225,000; plans to use upper stories as hotel; if hotel portion is built, total cost will approximate \$500,000; Holabird & Roche, Archts., 1400 Monroe Bldg., Chicago, Ill. (Previously noted.)

N. C., Burlington.—Jos. A. Insley & Bros. Co. let contract to J. A. Bryan for brick work to erect 90x35-ft. store and office building; cost \$20,000; metal roof; electric lighting; W. L. Brewer, Archt. (Lately noted.)

N. C., Lumberton.—McIntyre & Lawrence let contract to H. G. Jones, Lumberton, to erect 2 two-story brick buildings; 24x30 ft. each.

Okla., Atoka.—Sam Joels let contract to remodel store.

Okla., Drumright.—George Bros. let contract to W. Hutton, Sapulpa, Okla., to erect stone building; construction begun.

Okla., Idabel.—Christian & Jones are reported to have let contract to erect 4 brick business buildings on Central Ave.

Okla., Idabel.—J. M. Skelton let contract to H. J. Harwell, Queen City, Tex., to Ed

Nance, Idabel, to erect building; brick; 25x30 ft.

Okla., Okmulgee.—P. K. Morton, Box 67, has plans by E. Coda, Okmulgee, for store and office building; 57x115 ft.; 2 stories; cost (without mechanical equipment) \$18,000; brick and wood construction; pitch and gravel roof; gas or steam heat to cost \$3000; gas and electric lighting, \$300; concrete sidewalks, \$250; construction by owner; subcontracts not let. (Lately noted.)

S. C., Charleston.—C. B. Huiel, 41 E. Battery St., let contract to L. H. Johnson, 139 Spring St., Charleston, to erect store and warehouse; 22 and 25 by 100 ft.; 3 stories; fireproof; cost \$12,000; tin roof; brick chimney; electric lighting to cost \$150; J. D. Newcomer, Archt., 32 Pitt St., Charleston. (West Shore Development Co. lately noted letting contract.)

S. C., Florence.—W. B. Boyle & Co. let contract to R. L. Graveley, Florence, to erect 2-story brick building for stables and stores; metal windows; tin roof; concrete floors; metal ceiling; hand elevator, 8x12 ft.; press brick front; cost \$15,000.

Tenn., Memphis.—Lowenstein Estate let contract to E. J. Pearson, Memphis, to alter and repair building to be occupied by Rhodes Furniture Co.; ordinary construction; gravel roof; remodel heating and lighting plants; install elevator, contract with Otis Elevator Co., 303 Metropolitan Bank Bldg., Washington, D. C.; cost of improvements, \$25,000; Harker & Cairns, Archts., Memphis. (Lately noted.)

Tex., Houston.—Finnegan estate let contract to Frank Heidelberg, Houston, to erect building at Main St. and Rusk Ave.; 2 stories; 100x100 ft.; fireproof; composition roof; Warren Webster modulating heating plant; Otis elevator; cost about \$60,000; A. C. Finn, Archt., Houston. (Lately noted.)

Va., Norfolk.—Henry Kirn let contract to Jesse Johnson, Norfolk, to erect 3-story brick store at Bank St. and City Hall Ave.; cost \$25,000.

W. Va., Dunbar.—J. D. Dent let contract to erect one-story business building.

W. Va., Dunbar.—Sol Cohen let contract to erect building for stores and hotel. (See Hotels.)

W. Va., Wheeling.—Edward Wagner let contract to Fetzer Winger Co., Wheeling, to erect wholesale grocery store building; 80x100 ft.; Turner or mushroom system of construction; Carey roof on concrete slab; cost \$70,000; F. F. Faris, Archt., Wheeling; contract for brick work let to Samuel Nesbitt, Wheeling. (Lately noted.)

W. Va., Wheeling.—Quarter Savings Bank let contract to erect store and bank building. (See Bank and Office.)

## THEATERS

Miss., Waynesboro.—Fagan-Peel Co. let contract to erect building for theater, store, offices and bank. (See Bank and Office.)

Mo., Marshall.—A. J. Keys let contract to Frank P. McClure, St. Louis, Mo., to erect opera house; cost \$17,000; G. H. Kennerly, Archt., St. Louis.

Mo., St. Louis.—Empress Amusement Co. let contract to Chapline Construction Co., St. Louis, to alter brick theater at 3820 Olive St.; cost \$8750.

Tenn., Coal Creek.—Weldon Lodge, No. 181, I. O. O. F., let contract to erect lodge building and opera house. (See Association and Fraternal.)

Tenn., Memphis.—J. B. Snowden let contract to James Alexander Construction Co., Memphis, to erect Majestic Theater; 40x150 ft.; fireproof; front 3 stories; electric lights; seating capacity 1100; glass marquise over sidewalk; plans by Steigemeier & Kennerly, Benoit Bldg., St. Louis; Harker & Cairns, Supervising Archts., Scimitar Bldg., Memphis. (Lately noted.)

## WAREHOUSES

D. C., Washington.—W. M. Griffiths will expend \$10,500 to erect warehouse and garage at 50 N. St. and 53 New York Ave. N. E.; 30x189 ft.; fireproof; slag roof; electric lighting; freight elevator to cost \$1500; Jas. Barrett, Archt., Hibbs Bldg., Washington; general contract (lately noted) let to Henry M. Lanford, 221 Oxford Bldg., Washington; let contract for brick work; contract to Otis Elevator Co., 303 Metropolitan Bank Bldg., Washington, for elevator.

Ky., Lexington.—Mrs. Nannie C. Bradley let contract to Congleton Lumber Co., Lexington, erect warehouse; 3 stories; cost \$7500.

Md., Baltimore.—Hannis Distilling Co. let contract to J. J. Walsh & Son, 1533 Maryland Ave., Baltimore, to erect warehouse on



Stockholm near Russell St.; 6 stories; fireproof; mill construction; 137.12x104 ft.; cost \$29,000. (Lately noted.)

S. C., Charleston.—C. B. Hulel, 41 E. Battery St., let contract to erect warehouse and store. (See Stores.)

## RAILROAD CONSTRUCTION

### RAILWAYS

Ala., Birmingham.—Bids will be asked within a few days by W. H. Wells, Acting Ch. Engr. of Constr., Alabama Great Southern R. R., Washington, D. C., for second track work thus: Birmingham to Grassell, 6.1 mi.; York to Cuba, 5.45 mi.; Meridian, Miss., to near Russell, 6.63 mi. These merely parallel main line on existing grades.

Ala., Decatur.—It is again reported that the Louisville & Nashville Railroad will build an extension from Lax to Decatur, about 14 mi. Survey in progress. H. C. Williams, Louisville, Ky., is Engr. of Constr.

Ala., Huntsville.—The surveys which the Nashville, Chattanooga & St. Louis Railway is making at Guntersville, Ala., are for the purpose of discovering whether it is feasible to shorten the ferry transfer on the Tennessee River between Guntersville and Hobbs Island, about 20 mi. Hunter McDonald, Nashville, Tenn., is Ch. Engr.

Ala., Montgomery.—Bruce Kennedy, Gen. Secy. Business Men's League, Montgomery, says that the Bay City, Lynn Haven & Northern Railway plan is being promoted by New York people represented by Fisk & Robinson, bankers, there, but the proposition is not yet in definite shape.

Fla., Bradenton.—East & West Coast Ry. has built 7 mi. of track on its 52-mi. line from Bradenton and Manatee to Arcadia, Fla. Trains are being operated and construction is being continued. A. W. Jones of Augusta, Ga., is building the road.

Fla., Live Oak.—The Suwannee River & White Springs Ry. Co. proposes to build a line from Live Oak to White Springs, Fla., 20 mi. J. B. Barton is Pres.; A. L. Glass, V.-P. and G. M.; Arnold P. Miller, Secy. and Treas. A. Lee Humphreys and A. P. Mickler are also interested.

Fla., Mulberry.—H. L. Pierce, Pres., Export Phosphate Co., Mulberry, says it has secured options on a terminal site and is now surveying for a railroad line to its phosphate property.

Fla., Tampa.—G. D. & H. D. Mendenhall, 212-215 Drane Bldg., 737 W. Monroe St., Jacksonville, Fla., will make preliminary survey of railroad for Harry L. Pierce from the pebble phosphate district to terminal at Tampa; also investigate for wharves and slips, in which latter work B. M. Sullivan, Ch. Engr., of Tampa, will be associated.

Ky., Lexington.—Louisville & Nashville R. R. has awarded contract to the Ryan Company of Elkton, Tenn., 100,000 yds. of yard construction work at Lexington.

Ky., Middlesboro.—Survey is to be made for the proposed electric railway from Middlesboro to Yellow Creek. Dr. W. Godfrey Hunter is interested.

Ky., Paducah.—Paducah & Illinois R. R. Co. has begun survey for line from Paducah to site of proposed bridge over the Ohio at Metropolis, Ill., about 12 mi. Charles Broadbeck is Ch. Engr.

Ky., Whitesburg.—Louisville & Nashville R. R. it is reported, will build five or six important branches to coal mines in Letcher and Perry counties, a line 5 mi. long up First Creek from Typo Station to be started immediately. H. C. Williams, Louisville, Ky., is Ch. Engr. of Constr.

Mo., Rolla.—Charter is granted for the Rolla, Ozarks & Southern Railroad Co. to build from Rolla to Anutt, Mo., 18 mi. J. Ellis Walker is Contractor, Gen. Mgr. and Sec. E. C. Comstock is Pres.

Okl., Clinton.—Frank Kell of Wichita Falls, Tex., according to a report from there, has acquired control of the Clinton, Oklahoma & Western Ry., 52 mi. long, from Clinton to Strong City, and will probably extend it. John Maney Clinton, Okla., is Gen. Mgr. Mr. Kell is V.-P. of the Wichita Falls & Northwestern, connection with which is made at Hammond.

Okl., Cushing.—Frank Brown of Independence, Kan., and R. D. Long, Mgr., Muskogee Electric Traction Co., are surveying for an interurban railway from Cushing to Drumright, Okla., 15 mi., via the Cushing oil field.

S. C., Greenville.—Greenville & Western Ry. is the new name of the old Greenville & Knoxville R. R., which may fulfil its plans for building an extension via Brevard, N. C., into Tennessee to connect with the Knoxville, Sevierville & Eastern R. R. Robert A. McTyer is Pres. and Gen. Mgr.; A. P. Coles,

V.-P.; Carl L. Lewis, Treas., and J. T. Slade, Supt.

Tenn., Jackson.—Mobile & Ohio R. R. Co. says its plans for the Cimore yard at Jackson, Tenn., are not yet determined. B. A. Wood, Mobile, Ala., is Ch. Engr.

Tenn., Knoxville.—Southern Ry. is again reported surveying for a cut-off from Bulls Gap to either Newport or Leadvale, Tenn., about 20 mi. W. H. Wells, Washington, D. C., is Ch. Engr. of construction.

Tenn., Jackson.—Concerning the report that the Mobile & Ohio R. R. contemplated building second track from Jackson, Tenn., to Corinth, Miss., the company says there are no definite plans proposed. B. A. Wood, Mobile, Ala., is Ch. Engr.

Tex., Alpine.—R. P. Parker, Ch. Engr., Kansas City, Mexico & Orient Ry., San Angelo, Tex., says: "No extension contemplated at this time," this referring to recent report that the road would be extended this summer to the Rio Grande.

Tex., Lubbock.—E. C. Noble of Houston has been elected Pres. of the Altus, Lubbock, Riswell & El Paso Ry., recently acquired from Ed Kennedy of Houston. Contract is let to a Cleveland (O.) firm to complete the road. J. M. West of Houston is First V.-P.; John J. Hawes of New York, Second V.-P.; J. E. Fowler of St. Louis, Secy. and Treas. Gill, Jones & Tyler of Houston, Gen. Attys.

Tex., Dallas.—J. W. Thompson, Wainwright Bldg., St. Louis, Mo., has been awarded contract for construction of new Union Terminal and tracks at Dallas. C. H. Dana, Dallas, is Ch. Engr.

Tex., Itasca.—A movement is in progress to build an interurban electric railway from Hillsboro via Itasca, Lovelace and Grandview to Burleson, Tex., about 35 mi. J. C. Butts, Sec. Commercial Club, Itasca, Tex., may give information.

Tex., Weldon.—Missouri, Kansas & Texas

Ry. has not yet made arrangements to extend the Beaumont & Great Northern R. R. from Weldon to Bermond, Tex. This refers to a recent press report.

Va., Lynchburg.—Southern Ry. Co. has let contracts to build second track thus: To C. W. Lane & Co. of Atlanta, between Amherst and Tye River, Va.; to H. J. Dunnivant & Co. of Chattanooga, between Tye River and Elma, Va. Other contracts are expected to be let soon. W. H. Wells, Washington, D. C., is Ch. Engr. of Constr.

W. Va., Philippi.—Philippi & Clarksburg Traction Co. is incept, says a report, with \$25,000 capital stock, to build an electric railway from Philippi to Clarksburg, about 20 mi. Incorporators: Samuel V. Woods, J. H. Woods, R. E. Talbot, Henry H. Byrer, J. C. Watson and E. R. Dyer, all of Philippi.

### STREET RAILWAYS

Ky., Bowling Green.—Southern Traction Co. is reported to have ordered 15,000 tons of rails preparatory to extending the Bowling Green Street Railway several miles.

N. C., Wilmington.—Material has been ordered for an extension of the Tidewater Power Co.'s Railway on Red Cross St. from Fourth St. to Wood and Rankin Sts. A. B. Skelding is Gen. Mgr.

Tenn., Chattanooga.—Rights of way are being secured by residents to close an agreement with the Chattanooga Railway & Light Co. for an extension of 2 mi. from the Missionary Ridge line to the Rossville short line.

Tex., Dallas.—Franchise is granted to Dan Sonnenheffer for an electric railway 2 mi. long through the Lakewood Addition east to Dallas.

Tex., Fort Worth.—Franchise has been granted to the Northern Texas Traction Co. to extend the Summit Ave. street-car line about 1 mi. G. H. Clifford is Gen. Mgr.

W. Va., Blacksville.—Morgantown & Wheeling Ry. Co., L. S. Brock, Pres., has applied for a franchise for an extension of its line into Blacksville. Company's address, Morgantown, W. Va.

W. Va., Morgantown.—South Morgantown Traction Co. proposes an extension, possibly to Fairmont, about 16 mi. John Madigan of Morgantown is Pres.

## MACHINERY, PROPOSALS AND SUPPLIES WANTED

Manufacturers and others in need of machinery or supplies of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery or supplies needed we will make their wants known free of cost, and in this way secure the attention of manufacturers and dealers throughout the country. The Manufacturers Record has received during the week the following particulars as to machinery and supplies wanted.

### "WANTS"

Art Glass Windows.—M. E. Church South, Rev. Ira C. Kiker, pastor, Frisco, Tex.—Prices on art glass windows for \$10,000 church building.

Bags (Burlap).—R. W. Minor, Box 301, Marion, Ala.—Addresses of manufacturers of burlap bags.

Baskets, etc.—R. W. Minor, Box 301, Marion, Ala.—Addresses of manufacturers of hampers, baskets, crates and burlap bags.

Boat Construction.—Mississippi River Com., Fourth Dist., U. S. Engr. Office, Queen and Crescent Bldg., 346 Camp St., New Orleans, La.—Bids until Aug. 3 to construct and deliver steel hull stern-wheel towboat Chalmette. Information on application. C. O. Sherrill, Major, Engrs.

Boiler.—Stockell-Myers Co., Petersburg, Va.—Prices on 40 H. P. second-hand locomotive boiler mounted on wheels.

Boilers.—Paul Wright, Mech. Engr., Brown-Marx Bldg., Birmingham, Ala.—Best delivered prices on first-class second-hand boilers; two 72 in. by 18 ft.; one 72 in. by 16 ft., or 66 in. by 18 ft.; all butt strap riveted, capacity 120 lbs. pressure; full description desired.

Boilers, etc.—Navy Dept., Bureau Yards and Docks, H. R. Stanford, Chief, Washington, D. C.—Bids until July 25 to furnish and install 200 H. P. water-tube boilers with accessories in central power plant at Guantanamo, Cuba; plans and specifications on application to Bureau or Commandant of navy-yard named.

Brick.—R. P. Farnsworth & Co., Owensboro, Ky.—Prices on 200,000 all-hard common brick for U. S. postoffice building at Tarboro, N. C.

Bridge Construction.—Loudoun County Commrs., Leesburg, Va.—Bids until July 16 to construct 2 bridges; one over Horse Pen

Creek near Sterling, 62 ft. 6 in. long; one across Crouch's Creek near Purcellville, 35 ft. 6 in. long; reinforced concrete; concrete substructure; 12-ft. roadways; blueprints on application to Childrey Co., Richmond, Va., at 50 cents and postage; for further information address State Roads Com., Richmond, Va.

Bridge Construction.—Loudoun County Commrs., Leesburg, Va.—Bids until July 26 to construct bridge across Broad Run near Paconian Springs; 88 ft. long; 12-ft. roadway; 4 standard 20-ft. reinforced concrete spans; blueprints on application to Childrey Co., Richmond, Va., at 50 cents and postage; for further information address State Roads Com., Richmond, Va.

Bridge Construction.—See Marine Railway, Bridge, etc.

Broom Machinery.—G. M. Holt, Fort Pierce, Fla.—Addresses of manufacturers of machines to wrap handles of whisk brooms.

Building Materials.—R. P. Farnsworth & Co., Owensboro, Ky.—Prices on terracotta, furring and partition tile; 200,000 all-hard common brick; 1000 yds. crushed rock or gravel for concrete work; corner bead, 1 in.; 7000 sq. ft. reinforcing fabric; iron for furring; light-colored non-staining waterproofing for U. S. postoffice at Tarboro, N. C.

Cable Ways.—A. W. Brown, Enterprise, Fla.—Addresses of manufacturers of cable ways, supported by latticed steel towers; operate by hydro-electric power for transporting freight or passengers distances up to 50 or 75 mi.

Canning Machinery.—R. W. Minor, Box 301, Marion, Ala.—Addresses of manufacturers of canning machinery and cans.

Cement.—R. P. Farnsworth & Co., Owens-

boro, Ky.—Prices on 1000 bbls. Portland cement for postoffice building at Tarboro, N. C.

Cement (Natural), etc.—Doullut & Williams, Civil Engrs. and Gen. Contrs., American National Bank Bldg., Shreveport, La.—Prices on natural cement and cluders and slag for use in concrete.

Cinders and Slag.—See Cement (Natural), etc., Doullut & Williams.

Culvert Construction.—Harris County Commrs., Houston, Tex.—Bids until July 13 to construct 5 concrete culverts on Westfield and Clark-St. Rd.; plans and specifications on file with County Engrs., from whom copies may be obtained; H. L. Washburn, County Auditor.

Culverts and Bridges (Concrete).—See Road Construction, etc., Franklin, N. C.

Excavation.—Commrs. Overflow Drainage Dist., C. M. Ergenbright, Chrmn., Searcy, Ark.—Bids until July 29 for 594,700 cu. yds. excavation; one main ditch and 22 laterals; main ditch 7 mi. long, bottom width 24 to 28 ft., depth 8 ft., excavation 300,000 cu. yds.; lateral No. 13 is 6 mi. long, bottom width 12 to 18 ft., depth 6 ft., excavation 170,000 cu. yds.; most of other laterals have bottom widths of 3 or 4 ft., with average cuttings of 3 or 4 ft.; plans and specifications on file with E. E. Mashburn, Engr., Judsonia.

Cutlery.—W. S. Sisley, Morgantown, W. Va.—Addresses of manufacturers of cutlery.

Dredging Machinery.—Jas. Karr, Fort Wayne, Ind.—Will require 3 machines; one 2½ yds., 70-ft. boom; one 1½ yds., 45-ft. boom, and one 1¼ yds., 40-ft. boom.

Drills.—Navy Dept., Bureau Supplies and Accounts, T. J. Cowie, Paymaster-Gen., Washington.—Bids July 21 to furnish 4 piston air drills for steel, reversible and non-reversible, schedule 6894; delivery Charleston, S. C.; for schedules apply navy pay office nearest navy-yard.

Drums (Banana).—Dr. W. A. Robinson, Old Fort, N. C.—Addresses of manufacturers of steel cones for shipping bananas.

Electrical Machinery.—Navy Dept., Bureau Yards and Docks, H. R. Stanford, Chief, Washington, D. C.—Bids until July 25 to furnish and install 40 K. W. turbine-driven exciter in central power plant at Navy-yard, Puget Sound, Wash.; plans and specifications on application to Bureau or Commandant of navy-yard named.

Electrical Equipment.—Fagan-Peel Co., Waynesboro, Miss.—Prices on electrical equipment and fixtures for \$10,000 building.

Electrical Machinery.—Navy Dept., Bureau Supplies and Accounts, T. J. Cowie, Paymaster-Gen., Washington, D. C.—Bids July 21 to furnish 4 portable ventilating sets, ¼ H. P., 120 volts, schedule 6893; delivery Charleston, S. C.; for copies of schedules apply to navy pay office nearest navy-yard.

Electric-light Plant.—J. A. Maddox (for Tygart Electric Co.), Olive Hill, Ky.—Will purchase machinery and supplies for electric-light system about Aug. 1.

Electric Wiring.—See Heating, Ventilating, Plumbing and Electric Wiring.

Excelsior Machinery.—G. M. Holt, Fort Pierce, Fla.—Addresses of manufacturers of excelsior machines.

Fans.—H. N. Sharp, Swansons, S. C.—Catalogues and prices on fans; operate by shafts.

Fire Extinguishers.—Navy Dept., Bureau Supplies and Accounts, T. J. Cowie, Paymaster-Gen., Washington, D. C.—Bids July 21 to furnish 200 fire extinguishers, Navy Foam, 1-qt. size, schedule 7000; delivery Brooklyn; for schedules apply navy pay office nearest navy-yard.

Forms (Leggins).—Harriman Leather Goods Mfg. Co., 415 Roane St., Harriman, Tenn.—Addresses of manufacturers of forms for making puttee leggins.

Grading, etc.—City of Birmingham, Ala.—Bids until July 14 to grade, macadamize, curb, gutter and construct sidewalk pavement on Pike Ave. from Byrne St. to railroad; cost \$5000; also 32d St. to 29th St.; cost \$4500; Julian Kendrick, City Engr.

Grading, etc.—City of Durham, N. C.—Bids, received by City Clerk, until July 16 to grade Alston Ave.; 13,500 cu. yds. excavation, 6300 lin. ft. concrete curb and gutter and 3665 ft. sewerage; information furnished by City Clerk, Municipal Bldg.; W. G. Bradshaw, Chrmn. Street Committee.

Heating Plant.—M. E. Church South, Rev. Ira C. Kiker, pastor, Frisco, Tex.—Prices on heating plant for \$10,000 church building.

Heating Plant.—Fagan-Peel Company,

Waynesboro, Miss.—Prices on steam heating plant for \$10,000 building.

**Heating Plant.**—Secy. Dist. Commrs., 509 District Bldg., Washington, D. C.—Bids until July 9 to install steam heating system in Webster School Bldg., 10th and H Sts. N. W.; proposal forms, specifications and information obtainable from Ch. Clerk, Engr. Dept., 427 District Bldg.

**Heating, Ventilating, Plumbing and Electric Wiring.**—City, John H. Gose, Clerk, Bristol, Va.—Bids until Aug. 3 for following work in grammar and high school building, Euclid Ave. and Piedmont St.: Heating and ventilating, plumbing, electric wiring and conduit work; Clarence B. Kearfott, Archt., Bristol, Tenn.

**Hose.**—Navy Dept., Bureau Supplies and Accounts, T. J. Cowie, Paymaster-Gen., Washington, D. C.—Bids July 21 to furnish 1000 ft. 2½-in. fire hose, schedule 6993; delivery Charleston, S. C.; for schedules apply navy pay office nearest navy-yard.

**Ice Machinery.**—J. A. Maddox (for Tygart Electric Co.), Olive Hill, Ky.—Will purchase machinery and supplies for ice plant about Aug. 1.

**Ice Machinery, etc.**—R. W. Minor, Box 301, Marion, Ala.—Addresses of manufacturers of machinery and chemical cold-storage plants.

**Ice Machinery.**—L. A. Encloe, Murphy, N. C.—Prices on machinery for 2-ton ice plant.

**Ironers, etc.**—Eli B. Manning, Manchester, N. C.—Correspondence (view to agency) with manufacturers of ironers and ironing-boards.

**Landscape Architect.**—Jas. D. Evans, for Board of Park Commrs., Florence, S. C.—Correspondence relative to engaging landscape gardener to survey and lay out city park of 30 acres.

**Laundry Equipment.**—Louisburg Coal & Ice Co., P. A. Reavis, Mgr., Louisburg, N. C.—Bids on laundry equipment; population 4000.

**Laundry Machinery.**—Eli B. Manning, Manchester, N. C.—Washing machines, wringers, ironers and ironing-boards.

**Levee Construction.**—City of St. Francisville, La.—Bids at office of Mayor until July 13 to construct 2 protection levees and reinforced concrete reservoir; bids for either levees or reservoir, or for both; forms of proposals, specifications and instructions to bidders obtainable from V. E. Smith, Engr., Franklin, La., or G. L. Plettinger, Town Clerk.

**Levee Construction.**—Commrs. Little Red River Levee Dist. No. 2, C. F. Long, Secy., Judsonia, Ark.—Bids until July 15 to construct 300,000 cu. yds. levee enlargement; length, 11 mi., of which 9½ mi. is through open cultivated land; height, 4 to 9 ft.; bonds sold and work to begin immediately after letting.

**Loading Machinery.**—J. R. Cohn, care J. R. Cohn Rail & Supply Co., 303 Scanlan Bldg., Houston, Tex.—Equipment to load logs, lumber and staves on cars from barge direct; minimum daily capacity, 20,000 ft. logs or lumber; lift, 50-ft. embankment in 300 ft. haul. Send quotations and specifications on new or second-hand equipment.

**Lumber.**—Geo. P. Bewley, Berwyn, Md.—Prices delivered B. & O., College Park, Md., on 2 bills of lumber as follows: 208 pieces 2x8 in.—12 ft.; 208, 2x6 in.—12 ft.; 56, 2x10 in.—18 ft.; 28, 2x10 in.—16 ft.; 28, 2x12 in.—18 ft.; 25, 4x4 in.—16 ft.; 14, 2x12 in.—16 ft.; 4, 2x12 in.—24 ft.; 2, 2x12 in.—24 ft.; all No. 2; 1000 ft. 1x4 mixed lengths; 5000 ft. sheathing, S. I. side; 1000 ft. 1x12 bds. d., one side; 6000 ft. No. 2 good flooring, 2½ in.; 208 pieces, 2x8 in.—12 ft.; 208, 2x6 in.—12 ft.; 80, 2x12 in.—12 ft.; 15, 6x6 in.—16 ft.; Georgia pine; 1000 ft. 1x6—16 ft.; 1000 ft. 1x12—12 ft., S. I. S.; 5000 ft. sheathing, S. I. S.; 5000 ft. 2½-in. flooring, 2½ in. No. 2; 32 pieces, 12x12 in.—16 ft., No. 1 Georgia pine.

**Lumber, Creosoted Ties, etc.**—Panama Canal, F. G. Boggs, Gen. Purchasing Officer, Washington, D. C.—Bids until July 24 to furnish lumber, creosoted ties, copper tubing, chisels, cable clips, twist drills, files, pipe dies, hack-saw blades, ratchet braces, vises, buckets, portable forges, grindstones, water coolers, marine clocks, hose, boiler lagging, magnesia pipe covering, emery paper, etc.; blanks and information relating to circular (No. 869) obtainable from this office and offices of assistant purchasing agents, 24 State St., New York; 614 Whitney-Central Bldg., New Orleans; and 1066 North Point St., San Francisco; also from U. S. Engr. offices in Seattle, Los Angeles, Baltimore, Philadelphia, Pittsburgh, Boston, Buffalo, Cleveland, Cincinnati, Chicago, St. Louis, Detroit, Milwaukee, St. Paul, Chattanooga, Louisville, Mobile and Galveston;

Commercial Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill., and Commercial Club, Tacoma, Wash.

**Machine Model.**—P. T. Whilden, 1022 Bank of Commerce Bldg., Norfolk, Va.—Correspondence relative to placing order for manufacture of model for patented machine.

**Marine Railway, Bridge, etc.**—Spring Lake Drainage & Levee Dist., Tazewell County, Ill.—Bids until July 24 at office of J. M. Powers, Atty., Pekin, Ill., for following: Marine railway for transferring boats across drainage district levee, including foundation, tracks, structural steel work and gasoline engine power plant; girder drawbridge and I-beam highway bridge; sheet piling spillway with brush and rock apron. Address Harman Engineering Co., Engr., Peoria, Ill.

**Metal Shingles, etc.**—M. E. Church South, Rev. Ira C. Kiker, pastor, Frisco, Tex.—Prices on metal shingles and ceiling for \$10,000 church building.

**Mixer (Concrete).**—R. P. Farnsworth & Co., Owensboro, Ky.—Prices on small power batch concrete mixer.

**Needle Thresher.**—M. L. Moore, Nickelsville, Va.—Addresses of manufacturers relative to manufacturing patented sewing machine needle thresher.

**Nozzles.**—Baltimore (Md.) Board of Awards.—Bids at office of City Register, City Hall, until July 15 to furnish and deliver 1200 nozzles with deflectors for sprinkling filters Nos. 5 and 6 at sewage disposal plant, sanitary contract No. 136; specifications obtainable at office Harry W. Rodgers, Secy. Sewerage Com., 904 American Bldg.

**Oil Mill Machinery.**—R. W. Minor, Box 301, Marion, Ala.—Addresses of manufacturers of cotton oil mill machinery.

**Ovens.**—S. Arthur Davies, Box 62, Duncedin, Fla.—Addresses of manufacturers of portable ovens for bakeshop.

**Pallets.**—Dalton Bros. Brick Co., Hopkinsville, Ky.—Prices on 30,000 second-hand pine pallets, 10x34 in.

**Partitions (Rolling or Sliding).**—M. E. Church South, Rev. Ira C. Kiker, pastor, Frisco, Tex.—Prices on rolling or sliding partitions for \$10,000 church building.

**Paving, etc.**—Dept. of Public Finances, Accounting Division, New Orleans, La.—Bids until July 13 to construct subsurface drains, culverts, curbs, gutter bottoms, sidewalk paving and street paving on Louisiana Ave. (Saratoga St. to S. Calborne Ave. and from Water to Saratoga St.), and on Coliseum St. (Louisiana Ave. to Aline St.); Pitch Lake asphalt and creosoted wood blocks on Louisiana Ave., and Pitch Lake asphalt on Coliseum St.; plans and specifications on file with City Engr., who will furnish bidders with blank proposal forms. A. G. Ricks, Commr.

**Paving.**—City, Dan T. Price, Mayor, Yonkum, Tex.—Bids until July 14 for first proposed street improvements of business district; about 7500 sq. yds. paving; cost about \$50,000; conditions, plans, etc., furnished by W. E. Dickerson, Engr.

**Paving.**—Board of Awards, care City Register, Baltimore, Md.—Bids until July 15 for granite block paving on Fallway; third section, Madison to Chase Sts.; specifications, drawings, etc., obtainable for \$5 deposit at office City Engr., H. K. McCay, City Hall.

**Paving.**—See Road Construction, etc., Franklin, N. C.

**Paving.**—Baltimore (Md.) Board of Awards, care City Register, City Hall.—Bids until July 15 to grade, curb and pave with sheet asphalt 37th St. from Charles St. to University Parkway; about 1100 sq. yds.; contract No. 125; specifications obtainable from Commrs. of Opening Streets, Eugene E. Grannan, Pres., City Hall; \$5 deposit required for each set of specifications covering contract.

**Paving.**—W. E. Pickard, Mayor, Kaufman, Tex.—Bids until July 10 to pave Court-house Sq.; 7550 sq. yds. pavement and 2000 lin. ft. combined curb and gutter; plans and specifications on file with City Clerk.

**Plumbing.**—See Heating, Ventilating, Plumbing and Electric Wiring.

**Road Construction.**—P. G. Brooks, County Clerk, Wharton, Tex.—Bids until July 14 to construct 60 mi. hard surface roads, including grading, outfall drainage ditches and placing of surfacing material; for further information address Norris Engineering Co., Wharton.

**Road Construction.**—Russell County Commrs., Seale, Ala.—Bids until Aug. 3 for grading, draining and sand-claying about 9 mi. of Eufula and Columbus Rds., beginning at Fort Mitchell; W. S. Keller, State Highway Engr., Montgomery, Ala.

**Road Construction, etc.**—Highway Com., E. H. Franks, Pres., Franklin Township, Macon County, Franklin, N. C.—Bids on and after July 10 on following: Grade about 10 mi. public highway; 8000 sq. yds. bituminous macadam paving; construct about 2500 ft. concrete curb and brick gutter; furnish and lay terra-cotta drain pipe, and construct concrete culverts and bridges; plans and specifications at Bank of Franklin.

**Road Rollers.**—Eastern Railway Supply Co., 413 American Bldg., Baltimore, Md.—Three 10-ton, 3-wheel, second-hand rollers for immediate delivery.

**Roofing.**—Dalton Bros. Brick Co., Hopkinsville, Ky.—Prices on 40,000 sq. ft. metal roofing.

**Roofing.**—D. T. Ingram, Clerk, Holland, Mo.—Prices on metal shingle roof.

**School Equipment.**—D. T. Ingram, Clerk, Holland, Mo.—Prices on desks and other school supplies.

**Screen.**—H. I. Hamilton, New Smyrna, Fla.—Small hand-power rotary screen, ½-in. mesh wire, for sifting shell.

**Sewers.**—City of Birmingham, Ala.—Bids until July 14 to construct sanitary sewers near 23d Ave. and 19th St., Ensley division; cost \$4000; Julian Kendrick, City Engr.

**Sewers.**—J. B. Winslett, City Secy., Dallas, Tex.—Bids until July 13 to construct Fitzhugh sanitary outlet sewer from Fair Park sewer on 2d Ave. to Ross Ave.; 18 in., 15 in. and 12 in.; certified check \$300; maps, etc., on file at office of City Engr.

**Sewer Construction.**—Board of Commissioners, Huntington, W. Va.—Bids until July 16 to construct trunk sewer in Fourth ward; plans, profiles and specifications on file with A. B. Maupin, City Engr.; L. A. Pollock, Commr. Streets, Wharves, etc.

**Sewer Construction.**—Board of Commissioners, Sewer Dist. No. 1, A. C. Lange, Secy., Blytheville, Ark.—Bids until July 30 to construct complete sanitary sewer system, including sewage treatment works, as follows: 6000 ft. 15-in. sewer, cut 8-18 ft.; 3500 ft. 10-in., cut 6-12 ft.; 3000 ft. 10-in., cut 4-10 ft.; 52,000 ft. 8-in., cut 4-10 ft.; 70 man-holes; 60 flush tanks; pumping pit; electrical pumping outfit (2 units); sewage treatment works consisting of contact and sand filtration beds, with apparatus; quantities approximate; plans and specifications after July 15 at offices of Secy. and of R. C. Huston, Ch. Engr., Room 630 Exchange Bldg., Memphis, Tenn.

**Sewer Construction.**—City of Birmingham, Ala.—Bids until July 7 to construct sanitary sewers in Eastern part of city and at Owenton; cost \$23,000; Julian Kendrick, City Engr.

**Sewer Construction.**—Dept. Streets and Sewers, A. N. Sloan, Commr., Chattanooga, Tenn.—Bids until July 8 to construct brick storm sewer on Bennett Ave. westward from Willow St.; proposal forms, specifications, etc., furnished on application to Dept. Streets and Sewers; plans and profiles on file with City Engr.

**Sluice Gates, etc.**—C. C. Pashby, City Clerk, Memphis, Tenn.—Bids until July 14 to furnish and erect following: Four 7½x10-ft. sluice gates, hand operated; six 60-in. circular sluice gates, hand operated; two 36-in. check valves; work will be let as whole; plans and specifications at office City Engr.; E. H. Crump, Mayor.

**Spillway.**—See Marine Railway, Bridge, etc.

**Steel Forms.**—R. P. Farnsworth & Co., Owensboro, Ky.—Prices on steel sidewalk forms for use in building U. S. postoffice at Tarboro, N. C.

**Telephone Equipment.**—Sabine Citizens' Telephone Co., H. B. Arnold, Secy., Hemphill, Tex.—Wire, brackets, telephones, arms, switchboards, central office equipment, etc.

**Tires.**—Morocco-American Trading Co., Tangier, Morocco.—Prices f. o. b. steamer, New York, on solid motor truck tires in following sizes: Front tires, 820x120 millimeters; rear tires, 970x160 millimeters; also desires information on gross weight and cubic measurements of tires packed for export.

**Theater Equipment.**—Fagan-Peel Co., Waynesboro, Miss.—Prices on equipment for theater and stage.

**Trucks (Electric Motor).**—Navy Dept., Bureau Supplies and Accounts, T. J. Cowie, Paymaster-Gen., Washington, D. C.—Bids July 21 to furnish 3 electric motor trucks, schedules 6997; delivered Charleston, S. C., and 2 Philadelphia, Pa.; for schedules apply to navy pay office nearest navy-yard.

**Vacuum Cleaners.**—Eli B. Manning, Manchester, N. C.—Correspondence (view to

agency) with manufacturers of vacuum cleaners operated by hand or foot power.

**Washing Machines, etc.**—Eli B. Manning, Manchester, N. C.—Correspondence (view to agency) with manufacturers of washing machines and wringers.

**Water-works.**—Office of U. S. Shelley, Mayor, Daytona Beach, Fla.—Bids postponed from July 11 (as lately noted) until later date to construct water-works system; two 25 or 40 H. P. oil engines, direct-connected to two 500 G. P. M., double-acting, triplex pumps; 50,000-gal. steel tank on 85-ft. tower, with riser pipe, expansion joint, balcony, ladder, etc.; 1630 ft. 8-in., 590 ft. 10-in., 8910 ft. 6-in. and 3885 ft. 4-in. cast-iron, class B, pipe; 7075 ft. 2-in. and 2600 ft. 1½-in. galvanized pipe with fittings; special castings; 23 double fire hydrants; one 10-in., seven 6-in., five 4-in., two 2-in. and five 1½-in. gate valves and boxes; quantities approximate; plans and specifications offices of Harry A. Horn, Clerk, or of Engr., J. B. McCrary Co., 1408 Third National Bank Bldg., Atlanta, Ga.

**Wire.**—Navy Dept., Bureau Supplies and Accounts, T. J. Cowie, Paymaster-Gen., Washington, D. C.—Bids July 21 to furnish 20,000 ft. solid duplex rubber covered 2-conductor electrical wire, schedule 6991; delivery Washington, D. C.; for copies of schedules apply to navy pay office nearest navy-yard.

**Wire Nails.**—Heinrich Bade, Semperhaus B. Spitalerstrasse, Hamburg, Germany.—Correspondence (view to agency) with American manufacturers of wire nails.

## FINANCIAL NEWS

The MANUFACTURERS RECORD invites information about Southern financial matters, items of news about new institutions, dividends declared, securities to be issued, openings for new banks, and general discussions of financial subjects bearing upon Southern matters.

### FINANCIAL CORPORATIONS

Ala., Geneva.—The report that a new bank is being organized in Geneva is erroneous.

Ala., Waterloo.—Farmers & Merchants' Bank of Waterloo is organized with \$10,000 capital.

Ala., Waterloo.—Bank of Waterloo has begun business; capital \$10,000. Buck Sharp, Pres.; J. L. Cooper, Cash.

Ga., Helena.—New bank is being organized by S. G. Meadows.

Ky., Wayland.—Wayland National Bank Incptd.; capital \$50,000. Jno. E. Buckingham, Pres.; Joe Hall, V.-P.; Jas. A. Williams, Cash. Business is to begin soon.

Md., Frederick.—Commercial State Bank has begun business; capital \$80,000; surplus \$20,000. Casper E. Cline is Pres.; R. S. J. Dutrow, Cash.

Mo., Benton.—Chaffee Trust Co. is chartered; capital \$50,000; directors, S. A. Ruch, James A. Finch, E. W. Loy, R. W. Finley, Elwood Alley, W. V. Miller and J. V. Ingrass.

Mo., Bismarck.—People's Bank of Bismarck chartered; capital \$15,000; directors, C. C. Kerlogon, J. G. Hunter, A. F. Denton, William Schultz, Hugh Steel, E. W. Hughes and Harry E. Evans.

Mo., Blackwell.—Bank of Blackwell chartered; capital \$10,000; directors, H. E. Brown, John M. Campbell, J. Benno Steinmetz, LeRoy G. Moore, Hugh L. White and Roscoe B. Jones.

Mo., Oronogo.—Farmers and Miners' Bank chartered; capital \$10,000; directors, Sam W. Dye, William E. Whitford, W. L. Davis, C. Kloppenstein and C. E. Elliott.

Mo., Edgar Springs.—Bank of Edgar Springs is chartered; capital \$10,000. J. E. Yourell, Pres.; Frank Cave, Cash.

Mo., Kenoma.—Farmers' State Bank chartered; capital \$10,000; directors, H. C. West, George K. Hoffmeister, Edward Vandermark, H. A. Brew, P. J. Sharrock, W. R. Harris and Fred Deatwyler.

N. C., Smithfield.—Johnston County Bank & Trust Co. is chartered; capital \$25,000; organizers, Wm. Sanders, L. LeMay, B. F. Wellons, G. B. Smithfield, Chas. I. Pearce, John F. Sanders, T. C. Evans, J. A. Wellons, Robert A. Sanders, John A. Narron, W. G. Rand and W. W. Cole.

Okla., Idabel.—Idabel National Bank has made application to organize; capital \$25,000; directors, J. A. Sharpe, F. H. Wright, J. E. Harris, R. Wright and J. F. Kirby. This succeeds the Idabel State Bank.

Okla., New Wilson.—First National Bank

[For Additional Financial News, See Page 64.]



**Merchants-Mechanics National Bank**  
 South and Water Sts. BALTIMORE MD  
 DOUGLAS H. THOMAS President.  
 JNO B. RAMSAY V-P and Chm. Bd of Dir  
 WM. INGLE Vice-President.  
 JOHN B. H. DUNN Cashier.  
 Capital \$2,000,000 Deposits \$21,670,000  
 Surplus and Profits \$2,175,000  
 Accounts of Banks, Bankers, Corporations and Individuals solicited.  
 We invite correspondence.

**Southern Steam Railroad Securities**  
 DEALT IN  
**F. J. LISMAN & CO.**  
 Specialists in Steam R. R. Securities  
 Members New York & Chicago Stock Exchanges  
 30 Broad Street NEW YORK  
 Stock Exchange Building, Philadelphia  
 108 So. La Salle Street, Chicago  
 18 Asylum Street, Hartford

Edwin Warfield, President  
**Fidelity and Deposit Company of Maryland**  
 Home Office: Baltimore  
 Total Assets over \$11,000,000.00  
 All Kinds and Classes of Surety Bonds and Casualty Insurance  
 Largest and Strongest Surety and Casualty Company in the World

**INVESTMENT SECURITIES**  
 Southern Stocks and Bonds  
 Municipal and Corporation  
 Cotton Mill Stock a Specialty  
 WM. S. GLENN, Broker, SPARTANBURG, S. C.

**JOHN NUVEEN & CO.**  
 First National Bank Building  
 CHICAGO  
 We purchase SCHOOL, COUNTY and MUNICIPAL BONDS. Southern Municipal Bonds a Specialty.  
 Write us if you have bonds for sale.

**R. J. BEAMAN**  
 Certified Public Accountant  
 Audits, Investigations and Accounting Systems  
 Union Central Bldg. CINCINNATI, OHIO

**We Buy Bonds**  
 City, County, School and Road, from Municipalities and Contractors  
 WRITE  
**THE PROVIDENT SAVINGS BANK & TRUST CO.**  
 CINCINNATI OHIO

For Interesting and Valuable Information about  
**PATENTS WANTED**  
 and bought by Manufacturers, send 6c. post. for large  
 illustrated paper Visible Results and Terms Book.  
 R. E. & A. D. Lacey, Dep't 5, Wash'ton, D. C. Estab. 1868.

**Federal Sales & Service Company**  
 MUNSEY BUILDING WASHINGTON, D. C.  
 Agents for Government Contractors  
 We solicit representation of manufacturers in connection with Government contracts on commission basis. Long and successful experience. References.

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**Paulson, Linkroum & Co.**  
 COMMISSION MERCHANTS

NEW YORK PHILADELPHIA CHICAGO  
 87-89 Leonard Street 120 Chestnut Street 206 S. Market Street

**The First National Bank**  
 17 South St., Baltimore, Md.  
 Capital, - - - \$1,000,000  
 Surplus and Net Profits, 450,000  
 Deposits, - - - 8,500,000  
 Especially well equipped to handle the business of Southern Banks, Corporations, Individuals and Manufacturers. We cordially invite correspondence and interviews.

**The National Exchange Bank**  
 OF BALTIMORE, MD.  
 Hopkins Place, German and Liberty Streets  
 Capital, \$1,000,000  
 August 9th, 1913. Surplus and Profits, \$764,091.00  
 OFFICERS  
 WALDO NEWCOMER, President.  
 SUMMERFIELD BALDWIN, Vice-Pres.  
 R. VINTON LANSDALE, Cashier.  
 C. G. MORGAN, Asst. Cashier.  
 Accounts of Mercantile Firms, Corporations, Banks, Bankers and Individuals Invited.

**Delaware Trust Company**  
 Wilmington, Delaware  
 INCORPORATING under broad, liberal, safe and stable Delaware laws. A fully equipped department for proper organization and registration of corporations. BANKING AND TRUST department gives special attention to out of town customers' accounts. TITLE DEPARTMENT examines and guarantees title to realty throughout Delaware. REALTY DEPARTMENT has sites for manufacturing industries. Modern Methods of management of property.  
 J. ERNEST SMITH, President and Gen. Counsel.  
 WM. G. TAYLOR, Vice-Pres. and Treasurer.  
 HARRY W. DAVIS, Vice-Pres. and Secretary  
 W. W. PUSEY, 2nd. Title and Real Estate Officer

**FIRST NATIONAL BANK**  
 RICHMOND, VIRGINIA  
 Capital and Surplus, - - - \$3,000,000  
 JNO. B. PURCELL, President  
 JNO. M. MILLER, Jr., Vice-Pres.  
 W. M. ADDISON, Cashier

**GO SOUTH!**  
**FOR SALE** Timber, Coal, Iron, Ranch and Other Properties  
 Southern States, West Indies, Mexico  
**SOUTHERN STATES DEVELOPMENT CO.**  
 (Brokers) Geo. B. Edwards, Pres.  
 Tribune Building NEW YORK, N. Y.  
 Confidential Negotiations, Investigations, Settlements, Purchases of Property

**WE BUY MUNICIPAL BONDS**  
 FROM  
 Municipalities and Contractors  
**BREED, ELLIOTT & HARRISON,**  
 First Natl. Bank Bldg., CINCINNATI, OHIO

**The First National Bank**  
 OF KEY WEST, FLA.  
 United States Depository and Disbursing Agent  
 Capital and Undivided Profits - - - \$100,000  
 Surplus - - - 40,000  
 A general banking business transacted  
 Special attention given to collections

**We Finance**  
 Electric Light, Power and Street Railway Enterprises  
 With Records of Established Earnings  
**We Offer**  
 Bankers and Investment Dealers  
 Proven Public Utility Securities  
 Correspondence Solicited  
**Electric Bond and Share Company**  
 (Paid-up Capital and Surplus, \$12,500,000)  
 71 Broadway New York

**We Buy** City, County School and Drainage **BONDS**  
 FROM MUNICIPALITIES OR CONTRACTORS  
 We are in position to pay HIGHEST PRICES. Write or wire us your offerings.  
**THE NEW FIRST NATIONAL BANK** Assets, \$6,000,000 COLUMBUS, G.

### CHECK BOOKS

Look at the imprints on checks passing through your office. If you are south of Mason and Dixon's Line and East of the Mississippi River, you will find more of our imprints than of any other. Of course there is a good reason. When needing check books consult

### Young & Selden Co.

**BANK STATIONERS BALTIMORE, MD.**  
 Lithographing, Printing, Envelopes  
 Blank Book Makers, Book Binding  
 Letter Heads, Office Supplies  
 Steel Die Work

**THE TILLOTSON & WOLCOTT CO.**  
 CLEVELAND, OHIO  
**BUYERS OF COUNTY CITY SCHOOL AND BONDS DRAINAGE**  
 Correspondence Solicited



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Get your statements out promptly and collections will come in faster.

Better collections mean more use of your capital—taking all discounts—fewer bad debts—less money to borrow—better standing at your bank.

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**Peabody, Houghteling & Co.**  
 (Established 1865)  
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**To Manufacturers and Capitalists**  
 Contemplating the Establishment of Industrial Enterprises  
 Attention is called to the exceptionally favorable location of  
**NEWPORT NEWS, VA.**

on Hampton Roads, fifteen miles from the sea. Deep water, railway and sea transportation facilities unrivaled. Climate salubrious. Apply to  
**W. B. LIVEZEY, President** OLD DOMINION LAND COMPANY  
 NEWPORT NEWS, VA.

ESTABLISHED 1884  
 State, City and Corporation Securities Purchased Direct or from Holders.  
 Temporary Loans Arranged on Such Collateral.  
 Deposits, Dec. 31, 1912, \$ 9,132,372.15 Increase, \$1,970,862.54  
 Dec. 31, 1913, 11,103,234.69  
 WE PAY 3% INTEREST SUBJECT TO CHECK  
 Largest Capital and Surplus of any financial institution in Maryland or south of Washington, D. C.  
**MERCANTILE TRUST & DEPOSIT CO.**  
 OF BALTIMORE  
 A. H. S. POST, - - - President  
 FRED G. BOYCE, Vice-President  
 JOHN McHENRY, Treasurer  
 WILTON SNOWDEN, Vice-President  
 J. R. WALKER, "

chartered; capital \$25,000; P. W. McKay, Pres.; J. B. Gilstray, Cash. This succeeds the Oklahoma State Bank.

Okla., Vian.—First National Bank chartered; capital \$25,000; I. H. Nakdimen, Pres.; D. S. Coleman, Cash. This succeeds the Citizens' Bank of Vian.

S. C., Charleston.—Carolina Security Co. is chartered to do a general real estate and securities brokerage business; capital \$10,000. Geo. R. Fishburne, Pres.; C. B. Hulet, V. P. and Treas.; C. H. Behlmer, Secy.

S. C., Columbia.—The Win Va Realty Trust, 1815 Park St., chartered and inceptd.; capital \$9000; surplus, equity in real estate, \$11,000. Organizers: James L. Denny, Pres. and Treas.; J. W. Denny, Secy., and E. R. Denny. This is a holding company for the present.

Tenn., Littleton.—People's Bank is chartered; capital \$10,000; T. B. Tatum, Pres.; J. W. Shouse, V. P.; W. H. Blizwell, Cash. Business is to begin about Sept.

Tenn., Newbern.—People's State Bank will begin business soon. N. L. Scobey, Pres.; S. I. Biddle, V. P.

Tenn., Nashville.—Burns & Sharpe Insurance Co. has filed application for charter; capital \$25,000; incorporators, Virginia M. Burns, Mora H. Sharpe, M. J. C. Wrenne, R. L. Kennedy and Porter Phillips.

Tex., Lipan.—First National Bank of Lipan is organized with \$25,000 capital; W. H. Roach, W. S. Dant, D. C. Carter, G. T. Sears and N. Tolbert, directors. This succeeds the Farmers & Merchants' Bank of Lipan.

Va., Danville.—Homestead Building & Loan Association is chartered; capital \$50,000 to \$100,000. Organizers: W. P. Hodnett, Pres.; C. B. Davis, V. P., and D. S. Ragland.

Va., Richmond.—Trustees' Loan & Guaranty Co. inceptd.; capital \$5000 to \$100,000; Roy McCullough, Pres.; G. Stickley, Secy. and Treas.

W. Va., Academy.—Bank of Hillsboro chartered; capital \$25,000; organizers, Geo. W. Callison, L. P. McLaughlin, F. P. Kidd, C. J. Stutting, A. R. Smith, C. W. Kinnison, E. H. McLaughlin, O. B. Davis, Cane G. Beard and Jake Beard.

W. Va., Clarksburg.—Clarksburg Trust Co., capital \$100,000, is inceptd. by J. W. Agnew, C. W. Liggett, Ross F. Stout, W. I. Booth and A. S. Law.

### NEW SECURITIES

Ala., Birmingham.—\$200,000 auditorium bonds voted last Nov. have been declared void by the Supreme Court, as city cannot issue bonds until authority is granted by the Legislature.

Ala., Collinsville.—\$16,000 water and sewer bonds defeated.

Ala., Huntsville.—It is proposed to issue \$30,000 school bonds. Address Board of Education.

Ark., Dermott.—\$175,000 drainage district bonds have been purchased by W. R. Compton & Co. at par.

Ark., Harrison.—Bids will be received until 3 P. M. July 22 by G. W. O'Neal, Secy., Board of Improvement Comms., care Midway Hotel, for the following 6 per cent. 5-20-year bonds: \$40,000 Water Dist. No. 1 and \$30,000 Sewer Dist. No. 1; denomination \$500 and \$1000.

Ark., Star City.—\$120,000 6 per cent. 20-year bonds Road Dist. No. 2, Lincoln county, were purchased at par by Judge Jas. Gould, Pine Bluff, Ark.

Fla., Apalachicola.—Board of Public Instruction of Franklin County proposes to ask for an election to vote on bonds for new school building for the special school district recently created in Apalachicola.

Fla., Arcadia.—\$350,000 of school bonds have been voted by special school sub-district in northeastern part of DeSoto county. Address County Comms.

Fla., Clearwater.—It is proposed to hold an election in Oct. to vote on street and sewer bonds. J. R. Jeffords is Mayor.

Fla., Fort Meade.—Election will probably be called to vote on water-works and sewerage bonds. Address The Mayor.

Fla., Gainesville.—Election is to be held to vote on \$30,000 sub-school district bonds. Address Board of Education.

Fla., Gainesville.—\$52,000 5 per cent. 25-year bonds have been voted to liquidate city indebtedness. Address The Mayor.

Fla., Jacksonville.—Comms. of Duval County have rescinded resolution to hold election Aug. 4 to vote on \$2,000,000 of road and bridge bonds and adopted new resolutions calling for election Aug. 4 to vote on \$1,000,000 of bonds.

Fla., Manatee.—Bids will be received by C. J. Majory, Mayor, until 2 P. M. July 22 for \$35,000 water, \$25,000 sewer and \$40,000 paving 5 per cent. 20-30-year bonds; denomination \$500.

Fla., Miami.—Bids will be received until 7.30 P. M. Aug. 6 for \$250,000 of an authorized issue of \$400,000 5 per cent. street, sewer, fire, sanitation and dock bonds; denomination \$1000; dated July 1, 1914; maturity 1919 to 1944; W. B. Moore, City Clerk.

Fla., Palatka.—Petitions are being circulated to call an election to vote on \$100,000 school-building bonds. Address Board of Education.

Fla., Ocala.—Bids will be received until 3 P. M. July 14 by the Board of Public Instruction of Marion County for \$8000 5 per cent. 20-year bonds Citra Special Tax School Dist. No. 10. J. H. Brinson is Secy. Further particulars will be found in the advertising columns.

Fla., Ocala.—Bids will be received until 3 P. M. July 8 by the Board of Public Instruction, Marion County, for \$30,000 6 per cent. 5-15-year school coupon warrants. J. H. Brinson is Secy.

Fla., Tallahassee.—Bids will be received until 10 A. M. Aug. 20 by Board of Comms., Everglades Drainage Dist., for \$1,000,000 6 per cent. drainage bonds. J. Stuart Lewis is Secy. Further particulars will be found in the advertising columns.

Ga., Augusta.—\$750,000 4½ per cent. 30-year flood-protection bonds voted June 1 have been validated, and it is stated the first installment will soon be placed on the market. Linwood C. Hayne is Mayor.

Ky., Madisonville.—Bids will be received until 3.30 P. M. July 14 by D. W. Gatlin, Mayor, for \$3800 6 per cent. street-improvement bonds; denomination \$100; dated Nov. 28, 1913; maturity Nov. 28, 1923, optional after Nov. 28, 1918.

Ky., Winchester.—Bids were received until 8 P. M. July 3 by S. B. Tracy, City Clerk, for \$30,000 6 per cent. street-improvement bonds.

Ky., Winchester.—\$29,897 of street bonds have been purchased by contractors B. C. Milner & Co. at par and interest.

La., Baton Rouge.—House of Delegates has passed bill authorizing the issuing of \$200,000 school bonds. Address Board of Education.

La., Glenmora.—It is reported that school bonds will be issued. Address The Mayor.

Md., Easton.—Bids will be received until noon July 8 for \$29,000 5 per cent. water bonds; dated Apr. 1, 1914; maturity \$1000 in each and every year beginning Apr. 1, 1924; also for \$15,000 5 per cent. street-improvement bonds; dated July 1, 1912, and maturing \$1000 in each and every year beginning with the year 1946 and running to the year 1951, inclusive, and \$2000 during each and every year from 1952 to 1958, inclusive; denomination \$1000. Joseph B. Sedgwick is Mayor and Jas. B. Clark, Clerk.

Md., Mt. Rainier.—A temporary injunction has been granted against the sale of \$12,500 6 per cent. water, light and sewer bonds which were advertised to be sold June 30. James A. Stockman is Clerk.

Md., Rockville.—Bids will be received until noon July 28 for \$15,000 5 per cent. Montgomery county bonds; also for \$11,000 5 per cent. Montgomery county bonds. Richard T. White, Jr., is Pres. Board of County Comms., and John A. Garret, Clerk.

Md., Salisbury.—\$30,000 4½ per cent. public improvement bonds have been purchased by Hambleton & Co., Baltimore.

Miss., Duncan.—\$10,000 6 per cent. sewerage and sidewalks bonds are being offered; dated Nov. 6, 1913; maturity Nov. 6, 1933. J. C. Roberts, Cleveland, Miss., is Atty.

Miss., Forest.—Beat 2, Lake Dist., Scott county, has voted road bonds. Address County Comms.

Miss., Friar Point.—Bids were received until noon July 7 by Board of Supervisors, Coahoma county, for \$100,000 5 per cent. 30-year road bonds; denomination \$500; dated July 1, 1914; maturity July 1, 1944.

Mo., Auxvasse.—\$16,000 bonds Consolidated School Dist. No. 1 have been purchased by the Mercantile Trust Co., St. Louis.

Mo., Cassville.—\$13,250 6 per cent. 3-20-year bonds Cassville School Dist., Saunders county, have been purchased by Wm. R. Compton & Co., St. Louis, for \$13,364.

Mo., Clarence.—\$10,000 electric-light plant improvement bonds are voted. Address The Mayor.

Mo., Herman.—\$17,000 5 per cent. water-works bonds have been purchased by Wm. R. Compton & Co., St. Louis.

Mo., Moberly.—Moberly School Dist. will vote July 21 on \$87,000 school bonds. A. B. Little is president Board of Education.

Mo., St. Louis.—\$4,750,000 Little River Drainage Dist. bonds are reported purchased by a syndicate of Chicago bankers. John N. Nolen is land commr. Jefferson City, Mo.

N. C., Cherryville.—\$30,000 5 per cent. school bonds have been sold at par to Sidney Spitzer & Co., Toledo, O.

N. C., Newton.—Plans are being made to issue \$5000 street-improvement bonds. G. A. Warlick is Mayor.

N. C., Shelby.—\$80,000 5 per cent. Cleveland County Railroad bonds are voted. Address County Commissioners.

Okla., Howe.—\$15,000 20-year township road bonds are voted and will be placed on the market in the near future. A. McDonald is Mayor.

Okla., Poteau.—Of the \$154,000 6 per cent. 25-year LeFlore county township bonds but \$48,000 were voted June 30. Address Dan W. Patton.

Okla., Stillwell.—Election is to be held in Adair county Aug. 4 to vote on \$20,000 courthouse and jail bonds. Address County Comms.

S. C., Greenwood.—Election is to be held in near future to vote on \$50,000 street-improvement and refunding bonds. Address The Mayor.

S. C., Manning.—Election is to be held July 21 to vote on \$10,000 sewerage and \$30,000 water-works 6 per cent. 20-40-year bonds. Address The Mayor.

S. C., Mullins.—Bids are being received for \$12,000 6 per cent. 20-year bonds by Clerk Board of Trustees Mullins School Dist.

Tenn., Centerville.—Hickman county has voted \$150,000 railroad-aid bonds. Address County Comms.

Tenn., Fayetteville.—\$60,000 5 per cent. 10-20-year bonds have been purchased by First Savings Bank & Trust Co., Nashville, at a premium of \$388.

Tenn., Fountain City.—Steps are being taken to issue \$15,000 school bonds. Address Board of Education.

Tenn., Halls.—Bids will be received until 2 o'clock Aug. 8 by Comms. Good Roads Dist. No. 4, of State of Tenn., for \$40,000 5 per cent. 10-30-year road bonds. J. M. Parrish is Chmn. of Board of Comms. Further particulars will be found in the advertising columns.

Tenn., Jackson.—\$75,000 6 per cent. 5-20-year bonds Madison County Drainage Dist. No. 1 were purchased by Oscar Moreland, Toledo, O., at par and interest.

Tenn., Lexington.—It is proposed to hold an election in Henderson county in August to vote on \$150,000 road bonds. Address County Comms.

Tenn., Memphis.—\$250,000 4½ per cent. 35-year water and \$1,000,000 5 per cent. 40-year levee bonds have been purchased at a premium of \$48,575 by Harris Trust & Savings Bank, Spencer Trask & Co., Chicago, and the Security Bank & Trust Co., Memphis, and Estabrook & Co., New York.

Tenn., Pikeville.—\$97,000 5 per cent. Bledsoe county road bonds were purchased June 16 by Duke M. Farson & Co., Chicago; denomination \$1000; dated June 1, 1914; maturity, \$50,000 June 1, 1944; \$47,000 June 1, 1951.

Tenn., Savannah.—\$240,000 Hardin county railroad bonds were voted June 29. L. L. Harbutt, County Clerk.

Tex., Austin.—Attorney-General has approved following securities: \$12,000 Dist. No. 19, \$6000 Dist. No. 36 and \$20,000 Dist. No. 25 Harris county common school district 5 per cent. 40-year bonds; \$1500 5 per cent. 20-year bonds common school district No. 108, Ellis county; \$500 Dist. No. 54; \$1200 Dist. No. 9; \$1200 Dist. No. 21, Young's county school bonds; \$1500 5 per cent. 20-year bonds Hardin county common school district No. 8; \$8000 5 per cent. 10-40-year bonds Bagwell independent school district, Red River county; \$50,000 5 per cent. 5-20-year Gregg county road bonds; \$6000 5 per cent. 10-30-year Whitewright permanent improvement bonds; \$60,000 5 per cent. 5-40-year Brazoria county bridge bonds; \$25,000 5 per cent. 10-20-year bonds Williamson county common school district No. 23; \$400,000 5 per cent. 40-year Navarre county

road and \$100,000 5 per cent. 20-40-year Trinity county road bonds.

Tex., Bastrop.—\$50,000 road and bridge bonds are voted. Address The Mayor.

Tex., Beaumont.—\$175,000 bonds Drainage Dist. No. 5 (Hillebrand Dist.), Jefferson county, are voted. Address County Comms.

Tex., Brenham.—Election will probably be held July 21 to vote on \$30,000 water-works and sewerage bonds. Address The Mayor.

Tex., Caldwell.—\$2000 Snook Dist., Burleson county, bonds, recently voted, were purchased by State permanent school fund at par and accrued interest. R. J. Alexander is County Judge.

Tex., Caldwell.—Election is to be held Aug. 3 to vote on \$136,465 5 per cent. 10-40-year bonds Levee Dist. No. 1, Burleson county. Address County Comms.

Tex., Dallas.—Petition is to be made to the County Judge by citizens of Mount Auburn Dist., Dallas county, to call a special election to vote on \$16,500 school bonds. Address County Comms.

Tex., Ennis.—Bids are being received by W. D. Farris, Mayor, for \$80,000 school, \$35,000 paving, \$35,000 water, \$30,000 sewer and \$17,500 city hall 5 per cent. 40-year bonds.

Tex., Greenville.—All bids received July 1 for \$400,000 5 per cent. bonds Road Dist. No. 1, Hunt county, were rejected, and new bids will be received at any time. Geo. N. Hall is County Judge.

Tex., Floresville.—Road Dist. No. 1 (Lavernia), Wilson county, has voted \$60,000 road bonds.

Tex., Houston Heights.—Question of issuing \$100,000 street-paving bonds is under consideration. Address The Mayor.

Tex., Lockhart.—\$3000 bridge bonds are voted. Address The Mayor.

Tex., Lyons.—\$390 Lyons School Dist., Burleson county, bonds have been voted. Address County Comms.

Tex., Oakville.—Election is to be held in Live Oak county in August to vote on \$100,000 road and bridge bonds, and Whitsett precinct voted June 27 on \$40,000 road bonds. Address County Comms.

Tex., San Marcos.—\$50,000 5 per cent. 10-40-year bonds Road Dist. No. 2, Hays county, have been purchased by E. A. Toebeleman of Galveston.

Tex., Texarkana.—\$30,000 school bonds are voted. Address The Mayor.

Tex., Tyler.—\$25,000 Winona Dist., Smith county, bonds are voted. Address County Comms.

Va., Danville.—Steps are being taken to hold an election to vote on \$100,000 5 per cent. 34-year bonds for purpose of constructing and owning yards, tracks, depots and terminals and letting out such property to some corporation which will use, maintain and operate same. Address The Mayor.

Va., Pulaski.—Bids will be received until noon Aug. 3 by J. F. Wysox, Treas. Pulaski county, for \$58,000 5 per cent. school bonds.

Va., Pulaski.—Bids will be received until noon Aug. 3 for \$58,000 5 per cent. 5-30-year school-improvement bonds. Address J. F. Wysox, County Treas., Pulaski county.

W. Va., Elkins.—\$125,000 5 per cent. municipal improvement bonds are to be voted July 18. Address The Mayor.

W. Va., Lost Creek.—Grant Dist., Harrison county, has voted \$9000 school bonds. Address County Comms., Clarksburg.

W. Va., Moundsville.—\$75,000 5 per cent. Union Dist., Marshall county, bonds were purchased at par with accrued interest by the Marshall County Bank.

W. Va., Williamson.—\$50,000 5½ per cent. 10-34-year school district building bonds have been purchased by R. M. Grant & Co., Chicago, at a premium of \$1281. \$50,000 Williamson county school bonds have also been purchased by Weil, Roth & Co., Cincinnati, at a premium of \$1041.

W. Va., Wellsburg.—Steps are being taken to hold an election to vote on Brooke county road-improvement bonds. Address County Comms.

W. Va., Williamson.—\$150,000 public improvement bonds are voted. Address The Mayor.

## VIRGINIA POLYTECHNIC INSTITUTE

### —AND— AGRICULTURAL AND MECHANICAL COLLEGE BLACKSBURG, VIRGINIA

Thirteen degree courses in Agriculture, Engineering and Applied Science. Two-year course in Agriculture and Farmers Winter Courses. J. D. EGGLESTON, President.

Apply to Registrar for Catalogue.



### Half a Century of Activity.

After nearly half a century in active business, Mr. R. C. Hoffman, the founder of R. C. Hoffman & Co., Inc., iron and steel merchants of Baltimore, has retired, and the management of the business will be continued under the same name by Mr. J. T. Hill, who has been vice-president of the company, and by R. C. Hoffman, Jr., who was secretary of the company.

In these days, when so many firms pass out of existence upon the retirement of their originators, it is of interest to see an old concern of this kind, which has stood for so much in the commercial life of Baltimore and the South, continue under the management of those who have grown up in the business. Mr. Hill has been associated with Mr. R. C. Hoffman since 1870. Mr. R. C. Hoffman, Jr., graduated at Johns Hopkins University in 1903. From there he went to the Steelton shops of the Pennsylvania Steel Co. and worked there until November, 1904, in order to thoroughly familiarize himself with the iron and steel industry. In 1904 he became associated with the firm of R. C. Hoffman & Co. as salesman.

When this firm was established, just after the close of the war, it conducted a general pig-iron business and became widely known as iron merchants. In 1891 the furnaces in Virginia in which R. C. Hoffman & Co. were interested, and whose product they had handled, were sold to the Virginia Iron, Coal & Coke Co. Following this the firm established its railway supply business, making a special feature of that, though continuing, but not on so large a scale as formerly, its pig-iron business. Since 1890 this company has done a general railway supply business and has pushed the products of the houses it represents throughout the South, and in that section it has developed a very large trade.

For a good many years Mr. R. C. Hoffman was vice-president of the Seaboard Air Line, and at the death of John M. Robinson, the president, Mr. Hoffman became president of the Seaboard, and under his management the road rapidly developed and became one of the most important factors in the general upbuilding of the South.

While the continued business operations of a firm covering a period of nearly half a century are of interest, one feature of special interest in connection with this concern is the pre-eminent business standing for commercial honor and integrity, as well as for financial strength, which this firm has ever held since it was started in 1866. In his retirement from active work R. C. Hoffman has the satisfaction of knowing that among the concerns whose business honor and integrity have added luster to all commercial activities of Baltimore, none has ever ranked in this respect higher than the firm which he established and which he now leaves in control of his son and of Mr. Hill, who has been intimately identified with him for more than a third of a century.

### To Creosote Shingles.

Argenta, Ark., July 4.

Editor Manufacturers Record:

The Argenta Shingle Creosoting Co., with a paid-up capital of \$10,000, was formed this week with E. O. Manees, president; M. Levy, treasurer, and G. S. Dobbins, secretary and manager, and has broken ground for the plant. The purpose of this company is to use a special process for treating shingles with preservative and fireproofing fluids. J. G. Paty has secured a number of patents for weatherproofing and fireproofing shingles in the past five years, during which time he has thoroughly tested and developed

his theories and machinery. His method of treating timber is to use cold instead of hot creosote in his process.

Since one-half of the 14,000,000,000 shingles used yearly in the United States is consumed in territory that can be easily furnished with creosoted shingles as a by-product of the pine sawmills in the South, the possibility of this new industry can only be imagined. At present 80 per cent. of the wood shingles come from Washington, thus paying a heavy freight haul. Southern cypress is more valuable in lumber than in shingles. It is estimated that more than 7,000,000,000 of shingles can be made annually from the mill waste of the pine sawmills which is now an absolute loss, but which can be converted into shingles at a cost of 50 cents per thousand, and when creosoted, make the most lasting and the most fire-resisting wooden shingle known, according to many bulletins of the Government on wood preservation.

This new industry not only affords the mill operators to convert a loss into a profit and the inventor to realize on the product of his brain, but it gives to the public a much better roofing for much less money.

The capacity of the present plant, which will be one of many such plants to be established in the country, is 250,000 per

day. Since the conservation of our natural resources is so dominant in the minds and activities of the people, it might not be uninteresting and unprofitable to let the public know what one man has labored at and perfected in the past five years along the line of turning the colossal waste of the sawmills into a profit for all concerned. It is estimated that 43 per cent. of the tree is wasted at the sawmill.

G. S. DOBBINS.

### Needed at St. Petersburg.

St. Petersburg, Fla., June 30.

Editor Manufacturers Record:

My patent sheet pile is novel and entirely original. It was not used in navy-yard at Key West, but only in and near St. Petersburg within the past year. It is protected with two broad or basic claims, one in the junction preventing sand and water seepage, the other intermediate sand core. These features commend it to public utility. St. Petersburg is a handsome little city of 5000 population in summer and about 25,000 to 30,000 in winter. First-class lumber yard, sash and door mill are needed at once. Two little mills here can't supply the demand properly. We need a shoe factory, sheet-iron and metal works, as builders have to send to Birmingham for steel and wait a

month or two for it. A good cabinet-maker could also do well in this ever-increasing little city. Building sand is scarce, and sells for \$2.50 per cubic yard. An arrangement like the Arundel Sand & Gravel Co. on Long Dock would be the real thing here and would be largely patronized, as there is not a sand yard in St. Petersburg, and the building business is increasing. Z. FRANKLIN POTTER.

## Cement For Sale

I will be glad to have bids on stocks of cement belonging to the bankrupt estate of the Southeastern Lime & Cement Company, said stocks located at Moorhead City, Port Royal, Savannah and Brunswick. These stocks consist of the best brands of the Lehigh Valley cements—Lehigh, Dexter, Dragon and Edison. At Savannah, 2000 barrels in wood and 3000 barrels in cloth sacks. At Port Royal, 500 barrels in wood and 1500 barrels in cloth sacks. At Brunswick, 300 barrels in wood and 2000 barrels in cloth sacks. This stock is in a more or less stock set condition, but the contents of the packages can all be used, as the cement has been tested. The cement in cloth sacks can also be used after the stock set cement has been crushed and screened. All empty bags that can be returned in good condition to the different factories are salable at 7½ cents each to the factory. I will consider any reasonable offer. Kindly address E. H. Pringle, Jr., Trustee of the Southeastern Lime & Cement Company, Charleston, S. C.

### PROPOSALS.

**PROPOSALS FOR MATERIAL FOR TWO 44,000-volt Substations, including Transformers, Switches, Lightning Arresters, Switch Panels, Annunciators, Fittings, etc.** Sealed proposals will be received at the office of the General Purchasing Officer, The Panama Canal, Washington, D. C., until 10.30 A. M. August 7, 1914, at which time they will be opened in public, for furnishing the above-mentioned articles. Blanks and general information relating to this Circular (No. 861) may be obtained from this office or the offices of the Assistant Purchasing Agents, 24 State Street, New York City; 614 Whitney-Central Building, New Orleans, La.; and 1086 North Point Street, San Francisco, Cal.; also from the U. S. Engineer Offices in the following cities: Seattle, Wash.; Los Angeles, Cal.; Baltimore, Md.; Philadelphia, Pa.; Pittsburgh, Pa.; Boston, Mass.; Buffalo, N. Y.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; St. Louis, Mo.; Detroit, Mich.; Milwaukee, Wis.; St. Paul, Minn.; Chattanooga, Tenn.; Louisville, Ky.; Mobile, Ala.; and Galveston, Tex.; Commerce Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill.; and Commercial Club, Tacoma, Wash. F. C. BOGGS, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

**\$35,000 Water Bonds; \$25,000 Sewer Bonds; \$40,000 Street Bonds—\$100,000**

City of Manatee, Florida, will receive sealed bids up to two o'clock P. M. on Wednesday, July 22, 1914, for the above issues of 20-30-year coupon bonds in denominations of \$500 each, bearing five per cent. interest, payable semi-annually.

These bonds have been duly validated in State Court, and bids must be so worded as to specify the net price that the city is to receive over and above all costs for legal or other fees, and shall state when the purchase money will be available. All bids must be accompanied by a certified check or checks in the amount of 2 (two) per cent. of the face of the bonds bid upon, which checks will be immediately returned if the bid is rejected, or applied upon the purchase money if the bid is accepted, and shall be forfeited if the successful bidder should fail to consummate the purchase and to pay for the bonds in accordance with the terms of the bid.

Bids will be considered for all of said bonds or any portion thereof, and the city reserves the right to reject any or all bids, or to reject or to accept a portion of any bid. Bids should be addressed to George C. Patten, City Clerk of Manatee, Florida, and marked "Sealed Proposal for Purchase of Bonds."

CHAS. J. MAJORY, Mayor.

### Road Grading

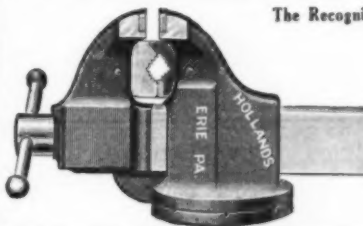
Marshall, N. C., July 7, 1914.

Sealed bids for the grading of approximately 10.2 miles of road, divided into four sections leading out from Marshall and Hot Springs, will be received by the Madison County Highway Commission at their office in Marshall, N. C., up to 12 o'clock noon July 23, 1914. Profiles and specifications may be seen in the office of the County Road Engineer, Marshall, N. C. The Highway Commission will furnish bidders with a blank form of proposal. No bid will be considered unless submitted on such form. The Highway Commission reserves the right to reject any and all bids. For further information address

J. B. CLINGMAN,  
County Road Engineer.

## HOLLANDS VISES

The Recognized Standard for over 25 years



Used exclusively by many leading industrial and railroad shops. Made of a high-grade mixture and heavily reinforced at all points where strain comes to insure against breakage. Holland Vises are made for the man that wants and demands the best. Prompt shipments guaranteed.

Write for catalog.

HOLLAND MFG. CO.  
ERIE, PA.



**Why Put a New Fuse Into the Circuit Every Time You Have a Blowout?**

Cut annual fuse maintenance 80% and secure positive electrical protection under all conditions.

## ECONOMY RENEWABLE CARTRIDGE FUSES

When an Economy fuse blows, you don't throw it away—you simply insert a new renewal element and have virtually a new fuse. 25 blowouts of an ordinary non-refillable fuse (100 Amps, 250 Volts) cost \$10.12½, while 25 blowouts of an ECONOMY renewable cartridge FUSE of the same capacity cost \$2.10—and remember Economy fuses give absolute protection—they do not vent fire nor hold a sustained arc. They are the only renewable fuses uniformly rated. Economy fuses meet the performance specifications governing the use of such devices.



Why spend four times more than necessary in fuse maintenance? Write today for Bulletin M. R.—and list of prominent satisfied users.

Two renewal elements furnished free with each Economy fuse. Figure the saving yourself.

**Economy Fuse & Mfg. Co.** Kinzie and Orleans Sts  
CHICAGO

# Classified Opportunities

## MEN WANTED

**UNDERSIGNED COUNSEL** will confidentially negotiate preliminaries for important executive, technical, administrative and professional positions insuring strictest privacy. Not an agency, but a highly-endorsed, high-grade method of negotiating preliminaries only, for \$300 to \$12,000 men. Send address only for explanation. R. W. Bixby, Lock Box 134-E6, Buffalo, N. Y.

**AGENTS WANTED** among supply dealers and salesmen for an exceptional house-lighting machine, suitable for small homes as well as large; simple, durable, economical; satisfaction guaranteed to customers; has excellent selling points; a live proposition. Write for terms. The Alexander N. Milburn Co., Baltimore, Md.

**YOUNG MEN** familiar with mill supply and jobbing trade to represent manufacturer of new and successful line of patented tools. Five experience and territory covered. No. 1568, care Manufacturers Record, Balto., Md.

**ARE MANUFACTURING** Hoover's Disc Grinder and Hoover Axle Set, both of which will eventually be in every blacksmith shop. Want local representatives to handle on commission and manufacturer's agent to place with their salesmen. Patents for both of these also for sale. Address The Hoover Manufacturing Co., Beloit, Kansas.

**WANTED**—Designer and detail man for billing out store fixtures of all kinds; must be accurate in measurements and willing to come to Louisville, Ky.; salary \$75 to \$100 per month. Address No. 1545, care Manufacturers Record, Balto., Md.

**WANTED**—Superintendent for planing mill; one who is competent and capable of producing results; must be a good estimator and hustler and understand taking work from plans; an excellent position for a good sober man. No. 1568, care Manufacturers Record, Balto., Md.

## AGENCIES WANTED

**WANTED**—Agencies for building material, specialties, builders' and contractors' equipment, cement, terra-cotta, reinforcing steel, etc. Am acquainted with everyone in the building business in this territory and have had considerable experience selling to contractors. Am in a position to carry accounts if necessary. Address Sydney L. Hechinger, 614 M Street N. W., Washington, D. C.

**WANTED**—Live agents on a commission basis to handle full line of vises and other machinists' and plumbers' tools. Good opportunity for men calling on the shops and industries of the South and Southwest. Address "Vises," care Manufacturers Record, Balto., Md.

**WANTED**—Exclusive sales agency for high-grade specialty lines for Atlanta and territory on commission basis, or would handle A-1 proposition on own account. Ten years' experience as salesman. References as to ability, integrity and financial responsibility. Address T. J. C., 29 Adair Ave., Atlanta, Ga.

**A CONCERN** in close touch with steel mills, foundries and large manufacturing plants desires agency for appliances or materials in which these plants would be interested. Are in a position to get best results. Specialties preferred. Address No. 1566, care Manufacturers Record, Balto., Md.

**WANTED**—Sales agency for all lines pertaining to builders' specialties; East Tennessee as territory; can furnish satisfactory references to interested concern; modern warehouse facilities. Address Daniel Briscoe, Jr., 325-327 State St., Knoxville, Tenn.

## SITUATIONS WANTED

**A FOREMAN** who has had ten years' experience on U. S. postoffice buildings wants position with good builder. Can furnish first-class reference. Write Foreman, 915 Main St., Fredericksburg, Va.

**SERVICES OFFERED** by exceptionally efficient man with 24 years' operating and office experience with blast furnace and mining company. "Practical efficiency" strong point. Best of references as to ability, character and integrity; member American Institute of Mining Engineers. No. 1569, care Manufacturers Record, Balto., Md.

**BY WELL-EDUCATED**, capable young D. E. bookkeeper, cost accountant and office executive; 10 years' experience; good references; clean habits. Address No. 1570, care Manufacturers Record, Balto., Md.

**CHEMIST**—Young man, graduate of Georgia "Tech." desires position with opportunity for advancement; salary a minor consideration. The opportunity is what I am after. X. Y. Z., 116 President St. W., Savannah, Ga.

**CONTRACTORS' ENGINEER**—13 years' responsible charge large general contract work; 4 years' charge of estimates, contracts, office and field organizations. Will make investment with position as executive. No. 1554, care Manufacturers Record, Balto., Md.

## RATES AND CONDITIONS

Rate 20 cents per line per insertion. Minimum space accepted, four lines. Maximum space accepted, 25 lines. In estimating the cost, allow seven words of ordinary length to a line. When the advertisement contains a number of long words, proper allowance should be made. Terms: Invariably cash with order; check, postoffice or express order or stamps accepted. No display type used. Questionable or undesirable advertisements will not be accepted. The assistance of our readers in excluding undesirable advertisements is requested. We reserve the right to refuse any advertisement. No patent medicine, whiskey or mining stock advertisements accepted. Rate for special contracts covering space used as desired within one year as follows: 100 lines, 18c. per line, 300 lines 16c. per line; 500 lines or more, 15c. per line.

**WANTED**—Position as superintendent of quarry; 14 years' experience; young man with small family; am hustler and good organizer; can furnish the very best of references. Address M. B. Malone, P. O. Substation No. 2, Charlotte, N. C.

**EFFICIENCY ENGINEER** desires position vicinity Baltimore, Md., with industrial firm. Designing, systematizing, power testing. Member Efficiency Society of New York. Address No. 1559, care Manufacturers Record, Balto., Md.

**CEMENT SALESMAN** and building specialty man open for position in Southern territory. Best of references as to past and present record. Address No. 1556, care Manufacturers Record, Balto., Md.

**WANTED**—Position as private secretary to executive in any commercial line offering a future; 5 years' experience in various manufacturing lines; prefer to locate in Western North or South Carolina. Address No. 1557, care Manufacturers Record, Balto., Md.

**WANTED**—Young man, age 25, position with large concern who demands the services of a skilled accountant and auditor. Thoroughly competent to produce results. Furnish gilt-edge reference on application. Willing to locate in any section of country. Address No. 1552, care Manufacturers Record, Balto., Md.

## EDUCATIONAL

**RENSSELAER POLYTECHNIC INSTITUTE, TROY, N. Y.**—Courses in Civil, Mechanical, Electrical and Chemical Engineering and General Science, leading to the degree of Civil Engineer (C.E.), Mechanical Engineer (M.E.), Electrical Engineer (E.E.), Chemical Engineer (Ch.E.), and Bachelor of Science (B.S.). Also special courses. Splendidly equipped new engineering laboratories. Send for catalogue to Registrar.

## CAPITAL WANTED

**\$60,000 DEVELOPMENT CAPITAL** wanted at once. Security, first mortgage on 44,000 acres richest tropical agricultural and timber land, Tabasco. Hundred million feet mahogany and other precious woods. On great river. Easy access. Title and all conditions perfect. Address J. P. Lewis, Petersburg, Va.

## SAWMILL DIRECTORY

**DIRECTORY OF SAWMILLS**, covering States of Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Tennessee and West Virginia. Index on each page shows where plant is located; its capacity; railroad upon which located; what the plant turns out and what its equipment consists of, that is, whether mill is band or circular, whether it has electric-light plant, logging railroad, etc. States specifically what kind of lumber is produced, covering more than 50 different kinds. Sold separately by States at \$3 per State, or \$15 for all eight States. More than 10,000 mills reported on. Address Southern Lumberman, Nashville, Tenn.

## DRAFTING

**STRUCTURAL STEEL DETAILS**—Drafting work wanted for New York office. Address Henry P. Webb, Box 33, Stapleton, N. Y.

## MODELS

**MODELS MADE FOR INVENTORS**—General machine work. Designing and perfecting. Developing automatic devices and machinery. In a position to do all kinds of light tool and machine work. Prices reasonable. Estimates cheerfully given. Ideal Machine Works, 64 Ann Street, New York City.

## BUSINESS OPPORTUNITIES

**BRICK PLANT TO LEASE**—Located on main line of C. & O. R. R. and Kanawha River, one mile above city. Can make iron-spot, flash buff, red and gray brick shingles and hollow tile. Coke oven. No limit to the possibilities of this plant. Seam is 7 to 12 feet in thickness. Demand far greater than supply. Do not write unless you want it. No. 1567, care Manufacturers Record, Balto., Md.

**CLAY TRACT** of 41 acres on Tidewater & Western R. R. at crossing of county road about one mile from Bermuda on James River, known as Epps' Crossing. Tract has been tested over its entire surface, showing clay exists to the depth of 4½ feet and covers entire property with overburden of 3 to 9 inches. The State Geologist reports as being the best found on the coastal plain, suitable for pipe, tile, pavers, fireproofing, and stiff-mud and dry-press face brick. Burns a dark cherry red, drying easily and safely.

This valuable clay bed, with a manufacturing site at Chester, for sale reasonable. The manufacturing site, consisting of between 3 and 4 acres, is on A. C. L. R. R. at junction of Tidewater & Western R. R., affording splendid shipping facilities to North or South by A. C. L. N. & W., S. A. L. T. & W., or by water. With proper development should prove a good money-maker. Full particulars upon request. Address Central Realty Co., Richmond, Va.

**FOR SALE**, or will exchange for timber lands or improved farm lands, half interest in planing mill and woodworking establishment with lumber yard in connection; doing \$65,000 annual business and increasing; plant located in heart of a live Kentucky town of 10,000 inhabitants; surrounded by a wealthy farming country. This is an excellent opportunity to get into a paying manufacturing and lumber business. Address No. 1560, care Manufacturers Record, Balto., Md.

**FOR SALE, OR PARTNER WANTED**—Manganese, iron and mountain of ballast or concrete rock on R. R., at depot; 190 acres land; we can get more. J. C. Clay, Gadsden, Va.

**EXPERIENCED BUSINESS MAN** with 19 years' operative and executive experience in fruit-package business, and with good will of a 25-years established trade, has offered him a running plant in excellent situation in the South for \$3000. Consider it an unusual opportunity and would like to interest capital to buy and run it and build into a big business with himself as manager. Almost unlimited field. Best references, and would ask same. Address No. 1563, care Manufacturers Record, Balto., Md.

**INFORMATION** any subject; coal, iron and lumber production; exports and imports; Gov't bids; legislation; trade opportunities; statistics, etc. Also daily and weekly news service. Reports \$1. General Information Bureau, Box 263, Washington, D. C.

**WILL SELL** 2080 acres good land North-east Mississippi, \$10 an acre, or prefer to borrow \$10,000 ten years, 5 per cent. interest. Ike A. Chase, Memphis, Tenn.

**WANTED**—Two reliable men with practical knowledge of store and office fixture business to invest \$1250 each, with services, in well-established and equipped manufacturing plant showing good returns. Best of references. Apply at once. Elliot & Co., Norfolk, Va.

**WANTED**—To connect with individuals who will be willing to invest \$15,000 in a very successful graphite company in the best section in the South. The company is most successful in selling its product, and with additional capital can enjoy increased sales at a large profit. The best references can be given. Address P. O. Box 732, Atlanta, Ga.

## MISCELLANEOUS

**WANTED**—Information of the firm of Henry Fink & Son and the operating headquarters of this concern. Any information as to the present domicile of this firm, please send to Box 35, Alexander City, Ala.

## DOORS

**WANTED**—To contract the output of our door factory; capacity, about 100 doors daily. W. R. Flowers Lumber Co., Dothan, Ala.

## HOTELS FOR SALE

**FOR SALE**—Small hotel at Wrightsville Beach, known as Hanover Inn, 40 rooms, completely equipped. Sale at auction July 15, 1914. For description and full information write J. G. Wright & Son, Real Estate Agents, Wilmington, N. C.

## INDUSTRIES WANTED

### MISCELLANEOUS

**FREE SITE** given for factory; electric power cheap; no city tax; 2 railroads; plenty of labor. Berkeley Land Company, Martinsburg, W. Va.

**HENRIETTA, TEX.**, offers unlimited supply natural gas 4c. to manufacturers; fire brick, tile shales; water; low taxes; healthful; 3 railroads; unusual opportunity legitimate enterprises. Address Booster Club.

**NORTH EAST, MARYLAND**, has free land and other lend-a-hand inducements to offer for new industries. Midway between Baltimore and Philadelphia. Pennsylvania and B. & O. Railroads. Write to the Board of Trade, North East, Md.

**BLUEFIELD, WEST VIRGINIA**, the gateway to the vast Pocahontas coal fields, and the distributing point for half a million contented laborers, needs an overall factory, needs a mine implement factory and needs a brick plant. Address C. T. Boykin, Secretary Bluefield Chamber of Commerce.

**AN UNUSUAL OFFER**—The owner of a 26-mile railroad will give a 15 per cent. interest in the road to a manufacturing concern locating on the line, whose freight will be substantial. A splendid site on a river, capable of developing 1200 continuous horsepower, will also be donated. The road has good main line connections with generous percentages. It is earning a surplus and is in a rapidly developing territory rich in possibilities. References will be required with answers to this advertisement. Address No. 1555, care Manufacturers Record, Baltimore, Md.

## INDUSTRIAL PLANTS FOR SALE

### MILLWORK PLANT AND PLANING MILL

**MILLWORK PLANT AND PLANING MILL FOR SALE**; practically new; in thriving town of 16,000 inhabitants; water and rail facilities. Please to correspond or interview interested parties. Address No. 1561, care Manufacturers Record, Balto., Md.

### LIME PLANT

**FOR SALE**—Eight-hill lime plant in East Central Tennessee for sale; owner wants to convert into cash; now operating; gravity transportation from quarry to kilns; favorable freight rates for wide territory, including parts of Florida and Louisiana and North Carolina. Address E. H. Pringle, Jr., Charleston, S. C.

### PRINTING PLANT

**FOR SALE OR LEASE**—Complete printing plant in good live town. Address Bank of Mulberry, Mulberry, Fla.

### BROOM HANDLE FACTORY

**FOR SALE**—A complete broom-handle factory; have splendid machinery. G. W. Atherton, Livermore, Ky.

### IRON WORKS FOR RENT

**SAYRE IRON WORKS FOR RENT**—In complete running order. Cupola, traveling and stationary cranes, flasks, concrete foundry building 78x200 feet, pattern shed, machine shop, office building, a separate. Water transportation from Old Point, and located directly on Chesapeake & Ohio Railroad. Good business. Now renting for \$225 a month. Apply Jas. M. Cumming, Phoebus, Va.

## MINERAL AND TIMBER LANDS, WATER POWERS AND MISCELLANEOUS PROPERTIES

**202½ ACRES**, kaolin deposit between 35 and 50 acres, \$15,000. **202½ acres** Fuller's earth deposit, \$15,000. Southern Ins. & Realty Co., Georgia Life Bldg., Macon, Ga.

**THIRTY THOUSAND ACRES MINERAL AND FARM LANDS** to suit, improved or unimproved, \$10 and up. Gold and mineral clay lands. Great opportunity. Write to Box 455, Abbeville, S. C.

### SILICA SAND

**SILICA SAND FOR SALE**—Very large deposit of pure white silica sand, with mill producing 150 tons per day; sand analyzes 99.86 pure; ideal place for silicate of soda works or chemical works; will bear closest investigation. J. F. Ballou, Millington, Ill.

### BRICK CLAY PROPERTY

**BRICK CLAY**—Attention, Brick Men! Have located within five miles of Atlanta large supply fine brick clay; excellent railroad facilities. This property is splendid location for Southern market. Can be bought reasonably, considering actual value. Estate of James E. Lynch, P. O. Box 519, Atlanta, Ga.

### COAL MINE FOR SALE

**HIGH-CLASS COAL Mine and Washer**, located in Southern Illinois, mining what is known as Carterville coal, for sale or exchange for timber land or any good income property to volume of \$150,000. Gent-Jones Brokerage Co., 317 Fisher Bldg., Chicago, Ill.



# Classified Opportunities

## COAL LAND FOR SALE

COAL LANDS.—I can offer you 376 acres coal land, with several houses, on railroad, at a bargain; can be opened up at small expense; excellent opportunity for experienced coal man. F. O. Havener, owner, Parkersburg, W. Va.

## TIMBER LAND FOR SALE

TWO HUNDRED THOUSAND (200,000) acres timber land in Florida, containing over 5,000,000 feet of original growth pine; has been cruised by expert; placed on the market for the first time at a very low figure. South Carolina timber; 15,000 acres on the Atlantic Coast Line and Southern Railroad. Estimated 65,000,000 feet short-leaf pine. For price and full particulars apply to Johnson's American and Foreign Real Estate Exchange, 945 Pennsylvania Avenue, Washington, D. C.

FOR SALE—22,000 acres yellow pine DeSoto Co., Fla.; will cut about 70,000,000 feet pine and 5,000,000 feet cypress. Reasonable terms. Address Box 135, Wauchula, Fla.

FOR SALE—22,000 acres timber land in Northwestern Alabama and Northeastern Mississippi, located on I. C. R. R., cruised to cut 6500 feet per acre; 50% short-leaf pine; balance in poplar, white and chestnut oak. Will allot in 10,000 to 20,000 acres to suit purchaser. Easy terms. Gent Jones Brokerage Co., 317 Fisher Bldg., Chicago, Ill.

145,386 ACRES of West Florida yellow pine timber lands at tidewater on the Gulf of Mexico, two-thirds of the acreage round timber, for sale by trustee in bankruptcy; 310,000,000 feet of cypress lowest cruiser's estimate; compact body, running to St. Joseph's Bay, Fla., 100 miles south of Tallahassee; Government intercostal canal runs midway of tract through longest dimension; land worth more for colonization after timber is cut than price asked now; appraised by Bankruptcy Court at \$1,250,000; trustee will cut that \$250,000 for prompt sale. Terms. C. E. Dobson, Pensacola, Fla.

FOR SALE—1000 acres timber land in one and two miles of Louisville & Nashville Railroad, 30 miles east of Memphis, Tenn. There are two million feet of gum and other valuable timber, such as white oak and red oak and hickory, on this land. Will offer this property for the next 10 days for \$30 per acre. Also have a sawmill outfit will sell with the land. Box 907, Memphis, Tenn.

NO. 547—VIRGINIA TIMBER TRACT—100 ACRES—\$3500; located in Albemarle county on a good road; 2 miles from railroad; estimated to cut over 1,000,000 feet of oak, pine, poplar and chestnut. For particulars regarding this and other timber and mineral tracts and farm lands inquire of Edward S. Wilder & Co., Charlottesville, Va.

HARDWOOD TIMBER TRACTS, 1000 acres up, direct from owners; cut 4000 feet white oak to acre; \$5 acre in fee; near proposed railroad, Newton county. Also have cheap stock and colonization tracts. Fredricks, Springdale, Arkansas.

WE HAVE 7160 acres timber land in Levy County, Florida. Will cut 10,000,000 feet of Pine and Cypress. Price \$4 per acre cash. Write Waring & Edwards, Lakeland, Florida.

5400 ACRES of virgin hardwood timbered land in East Tennessee, \$10 per acre; would exchange. Farm Realty Co., 828 Jefferson Co. Bank Bldg., Birmingham, Ala.

A FEW GOOD TRACTS in Southern States at prices attractive for investment or operation. Hemlock, spruce, oak, poplar, gum, cypress. Real Estate Investment Co., 816 Connecticut Ave., Washington, D. C.

TIMBER TRACTS located for manufacturer and investors by practical timbermen. Correspondence solicited. Jo A. Parker, Parma, Mo.

## FARM AND TIMBER LANDS

FOR SALE—Farm and Timber Land in Southeast Georgia. Land produces two and three crops per year. Especially adapted to growing cotton, corn, alfalfa and, in fact, anything that grows in the Southern States. If interested, write us for full information. South Georgia Farms & Realty Co., Fitzgerald, Ga.

7240 ACRES on S. A. L. Railroad will cut as follows:  
2,500,000 feet pine at \$2.50 M..... \$6,250.00  
3,000,000 feet hardwood at \$2 M..... 6,000.00  
2,000,000 feet large cypress at \$3 M..... 6,000.00  
40,000 cypress ties at 10c. each..... 4,000.00  
10,000 cords of wood at 25c. each..... 2,500.00  
10,000 cypress poles at 25c. each..... 2,500.00

Total for timber..... \$27,250.00  
Now, listen! Owing to other interests that will not let owners attend to this tract, we can sell this tract for \$27,500. When timber is taken off you will have as fine cattle ranch and farming land as you want. Remember, \$27,500 in fee. Southern Insurance & Realty Co., 314 Ga. Life Bldg., Macon, Ga.

FOR SALE—About 20,000 acres of land in fee in Eastern North Carolina, in close proximity to railroad. This land contains about 60,000,000 feet of pine and cypress timber. The land without the timber is splendid for farming. With the timber off is worth the price asked for the whole. Timber, Box 1089, Norfolk, Va.

FIFTEEN THOUSAND FOUR HUNDRED ACRES of good truck and citrus-fruit land, located in Santa Rosa county, twenty miles east of Pensacola. Seven thousand acres of this land is covered with a heavy growth of long-leaf pine, which will cut about twelve million feet. Price three dollars per acre. W. H. Upp, Box 331, Pensacola, Fla.

10,000 ACRES clay subsoil land, covered with long leaf pine; several lakes; fish galore, and thousands of deer and game; price, \$5 an acre. Also 150,000 feet fine timber. B. H. Tyson, Pikeville, N. C.

FARM AND TIMBER LAND on the easy-payment plan; some small improved tracts; good for cotton, corn, alfalfa and grain. Prices from \$4 to \$25 per acre. W. Knight, Real Estate Dealer, Bigelow, Arkansas.

## COLONIZATION LANDS

COLONIZATION.—One of the best tracts of land in East Texas, suitable for colonization or investment. For particulars write W. L. Bostick & Son, Tyler, Texas.

## DAIRY FARM

A POSITIVE BARGAIN.—480-acre dairy farm, 18 miles from Baltimore, 2 miles R. R.; 3 houses; 2 barns with every modern convenience; revenue of farm, \$10,000 annually; shipping 100 gallons milk daily. For quick sale, stock, crop, implements, \$75 per acre. E. H. Ankeny, American Bldg., Baltimore, Md.

## FARM AND CITRUS GROVE WANTED

WANTED.—I want to buy 20 to 50 acres improved farm and citrus grove in DeSoto county, Fla. Please write full particulars. Please state capabilities and nature of soil, also number of acres in and capabilities of groves, condition and number of houses, distance from railroads, packing-houses and towns—in fact, all information you can give. T. P. Blackmon, Marietta, Ga., R. F. D. No. 5.

## FRUIT, FARM AND TRUCK LANDS

### ALABAMA

FOR SALE.—2965 acres in Tallapoosa county, Alabama; 1000 acres river bottom; pays 12 per cent. on investment; \$15 per acre. For particulars write Charles A. Stewart, Temple Court, Chattanooga, Tennessee.

3420 ACRES at Donovan Station, on N. O. M. & C. Ry., 34 miles from Mobile. Oranges, grapes, peaches, plums, pecans and quinces now bearing. Full description on application. A rare chance for investment, stock farm or small colony. Absolute and perfect title. \$5 per acre. W. W. Woodruff, 409 City Bank, Mobile, Ala.

FOR SALE—13,000 acres of the best land in Southern Alabama, \$12.50 per acre; reasonable terms to responsible party. This is a fine investment and will make money for the buyer. James A. Lewis & Co., Mobile, Ala.

## FLORIDA

THE PALATKA FARMS COMPANY of Palatka, Florida, offers to homeseekers the very superior advantages of splendid soil, adapted to potatoes, corn and trucking, or that for oranges and grapefruit, or for combination of both, with location unsurpassed, lying along the beautiful St. Johns River, 2 miles of Palatka, an up-to-date city of 8000 population. It boasts of electric-light and gas plants, four railroads and cheap river transportation. Write for literature. F. J. Beck, Palatka, Fla.

THREE MONTHS FREE.—Subscription to the Indian River Farmer. For truckers, fruit growers, general farmers, and folks who want to know about Florida. Address Indian River Farmer, Dept. "V-1," Vero, Fla.

## MARYLAND

FOR SALE—Productive Carroll County, Md., farm; 350 acres near Railroad Station; stone dwelling, necessary outbuildings, all in good order. Well watered; fruit. Complete equipment if desired. Suitable for dairy, stock, fruit or general farming. D. Sterrett Gittings, Real Estate Broker, 401 Maryland Trust Bldg., Baltimore, Md.

## NORTH CAROLINA

FOR information regarding the best and lowest priced farm proposition in the rapidly developing lower Piedmont of North Carolina address J. R. McConnell, R. & C. Ry., Carthage, N. C.

## SOUTH CAROLINA

FOR SALE—584 acres, 1 1/2-room dwelling, 2 tenant-houses, 2 barns, 2 branches, 2 springs, 200 acres in timber, 175 acres in cultivation; 50 acres in pasture, 35 acres in bottom land; 7 miles from Abbeville, 3 miles from Verdery, 11 miles from Greenwood. Price \$7.75 per acre. A. J. Davis, Troy, S. C.

## VIRGINIA

1450-ACRE RIVER FARM, 28 miles from Richmond, Va., 5 miles from railroad; about 250 acres in cultivation, 200 acres rich low grounds, 200 acres young timber, balance rich new land from which timber has been cut; soil suitable for usual crops, trucking and bright tobacco; 4 dwellings, 4 to 9 rooms each; several sets of barns and outbuildings; grove of English walnuts, one of pecans and about 10 acres of chestnuts; several large orchards, all in bearing; a really good farming proposition in a healthy and desirable section, and should also appeal to a sportsman, for there is plenty of game and fish. Price \$15 per acre. A. L. Adamson, 913 Hull St., Richmond, Va.

FOR SALE—4300 acres good undeveloped farming and orchard land; good soil and convenient to railroad. Price \$5 per acre. Lane-Harris Corporation, Altavista, Va.

FARMS FOR SALE.—Large list Northern Virginia grazing, grain, fruit and poultry farms; colonial estates; \$500 to \$80,000; catalogue. B. F. Perrow, Remington, Virginia.

FOR SALE—100-acre farm, 80 acres timber, \$40 acre; 5 miles from Richmond, Va.; R. R. station 1/2 mile; street car walking distance. Address R. C. Wirth, Indianapolis, Ind.

VIRGINIA, the ONLY just right climate. Elegant farms ten to thirty dollars acre. One-third cash, balance when convenient. J. E. Barrett, Carrsville, Va.

## MACHINERY AND SUPPLIES

FOR SALE—Five-ton champion horse road roller. Will sell cheap to quick buyer. Address No. 1564, care Manufacturers Record, Balto., Md.

32 H. P. FAIRBANKS-MORSE STATIONARY GASOLINE ENGINE, practically as good as new. Cheap. Geo. W. Willis, Canal Dover, Ohio.

## WAGONS FOR SALE

WAGONS FOR SALE.—Ten Troy dump-bottom reversible traction wagons, 3 1/2-yard, with 10-inch tires; have been used four months. Geo. G. Henderson, care Manufacturers Record, Balto., Md.

## PATENTS AND INVENTIONS

INVENTIONS developed by practical manufacturers. We have designed and manufactured the simplest and most complicated devices. References furnished. Russell Machine Co., Live Oak St., Dallas, Texas.

## PATENTS FOR SALE

FOR SALE—Round-bottom paper-bag invention; patent applied for; much more convenient and useful than the old flat and square bags. Address Box 26, Coleman, Tex.

## PATENT ATTORNEYS

EUGENE C. BROWN, ENGINEER AND PATENT LAWYER, Suite 40 Victor Building, Washington, D. C. Member Bar U. S. Supreme Court. Patents and Trademarks. Inventions are considered both from Engineering and Legal standpoints in my prosecution of patents. An experience of over 9 years as Examiner in U. S. Patent Office and over 6 years as Patent Expert in important patent suits are my special qualifications. Reports upon validity and infringement. Send sketch of invention for advice.

PATENTS.—Herbert Jenner, patent atty. and mechanical expert, 606 F St., Washington, D. C. I report free of charge if a patent can be had and its exact cost. Send for circular.

PATENTS THAT PROTECT.—Careful, honest work in every case. Patent your ideas; they may bring you wealth. 64-page book free. Fitzgerald & Co., 317 F street, Washington, D. C. Established 1878. Send for our book.

PATENT YOUR INVENTION.—Send sketch for free expert search and report as to patentability. Books on inventions and patents, and book of references from congressmen, manufacturers, bankers and inventors, sent free. John S. Duffie & Co., Patent Attys., 620 F St. N. W., Wash., D. C.

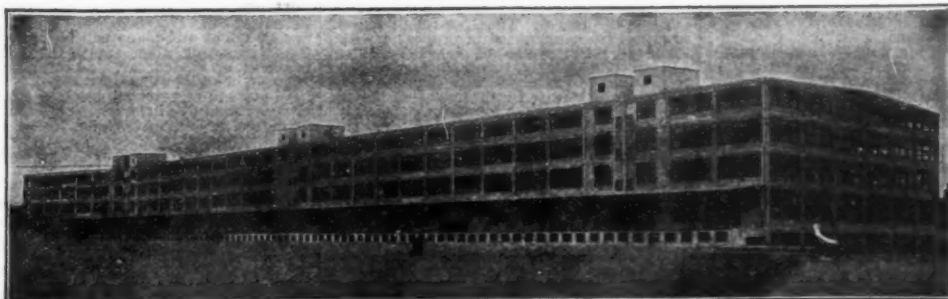
"PATENTS AND PATENT POSSIBILITIES" is a 72-page treatise which tells all about patents, what to invent and where to sell it. It gives honest advice to inventors and is full of valuable and interesting information. Write for it today! It is free. H. S. Hill, 916 McLachlen Bldg., Washington, D. C.

PATENTS THAT PROTECT AND PAY. Advice and books free. Highest references. Best results. Promptness assured. Send sketch or model for free search of Patent Office records. Trade-marks registered. Watson E. Coleman, Patent Lawyer, 624 F St., Washington, D. C.

PATENT YOUR IDEAS.—\$9000 offered for certain inventions; book, "How to Obtain a Patent" and "What to Invent," sent free upon request; send rough sketch for free report as to patentability. We advertise your patent for sale at our expense. Chandler & Chandler, patent attorneys, 978 F St., Washington, D. C.

PATENTS secured or Fee returned. Send sketch for free report as to patentability. Guide book and what to invent, with valuable list of inventions wanted, sent free; \$1,000,000 offered for one invention; \$15,000 for others. Patents secured by us advertised free in World's Progress; sample free. Victor J. Evans & Co., Washington, D. C.

## 500,000 Feet of Storage Space at Jacksonville, Fla. for Jobbers and Manufacturers



Located in the Heart of Jacksonville's Shipping Section

Unequaled Storage and Shipping Facilities. A Big New Building that is Fire, Rat, Vermin and Burglar Proof.

Insurance Rate 1/4 of 1%.

Union Terminal Company  
Jacksonville, Fla.



# PROPOSALS

BOND ISSUES

BUILDINGS

PAVING

GOOD ROADS

## GOVERNMENT PROPOSALS

**PROPOSALS FOR LUMBER, CREOSOTED**  
Ties, Copper Tubing, Bolts, Washers, Galvanized Wire, Chisels, Cable Clips, Twist Drills, Files, Pipe Dies, Hack-saw Blades, Ratchet Braces, Vises, Buckets, Portable Forges, Grindstones, Electric Blowers, Paintbrushes, Foundry Brushes, Hatcher's Blocks, Water Coolers, Marine Clocks, Hose, Boiler Lagging, Magnesia Pipe Covering, Emery Paper, and Crayons. Sealed proposals will be received at the office of the General Purchasing Officer, The Panama Canal, Washington, D. C., until 10:30 A. M. July 24, 1914, at which time they will be opened in public, for furnishing the above-mentioned articles. Blank and general information relating to this Circular (No. 860) may be obtained from this office or the offices of the Assistant Purchasing Agents, 24 State Street, New York City; 614 Whitney-Central Building, New Orleans, La., and 1086 North Point Street, San Francisco, Cal.; also from the U. S. Engineer Offices in the following cities: Seattle, Wash.; Los Angeles, Cal.; Baltimore, Md.; Philadelphia, Pa.; Pittsburgh, Pa.; Boston, Mass.; Buffalo, N. Y.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; St. Louis, Mo.; Detroit, Mich.; Milwaukee, Wis.; St. Paul, Minn.; Chattanooga, Tenn.; Louisville, Ky.; Mobile, Ala., and Galveston, Tex.; Commercial Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill., and Commercial Club, Tacoma, Wash. F. C. BOGGS, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

**TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C.**  
June 30, 1914. Sealed proposals will be opened in this office at 3 P. M. August 12, 1914, for the construction, complete (including mechanical equipment, interior lighting fixtures, and approaches), of the United States postoffice at Georgetown, Ky. Two-story-and-basement building; ground area, 4800 square feet; fireproof construction; stone facing; composition roof. Drawings and specification may be obtained from the custodian of site at Georgetown, Ky., or at this office, in the discretion of the Supervising Architect. O. WENDELOTH, Supervising Architect.

**TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C.**  
June 30, 1914. Sealed proposals will be opened in this office at 3 P. M. August 4, 1914, for the construction, complete (including mechanical equipment, interior lighting fixtures, and approaches), of the United States postoffice at Wytheville, Va. The building is two stories and basement, with a ground area of approximately 4100 square feet; brick facing; tin and composition roof; first floor of fireproof construction. Drawings and specifications may be obtained from the custodian of site at Wytheville, Va., or at this office, in the discretion of the Supervising Architect. O. WENDELOTH, Supervising Architect.

**TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C.**  
June 30, 1914. Sealed proposals will be opened in this office at 3 P. M. July 28, 1914, for the construction of proposed quarters for Stamp Division, Internal Revenue Commissioner's Office, Auditors' Building (old Bureau of Engraving and Printing), Washington, D. C. Drawings and specifications may be obtained at this office, in the discretion of the Supervising Architect. O. WENDELOTH, Supervising Architect.

**PROPOSALS** will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 o'clock A. M. July 14, 1914, and publicly opened immediately thereafter, to furnish at the Naval Academy, Annapolis, Md., a quantity of naval supplies, as follows: Sch. 3230, lathes, Sch. 6946, brass and galvanized pipe, lamp cord, nickel-plated floor plates, compression bibbs, brass bushings, nipples and plugs, pipe vise, wrenches, hinges, screw eyes, bolts and nuts. Applications for proposals should designate the schedules desired by number. Blank proposals will be furnished upon application to the navy pay office, Baltimore, Md., or to the Bureau. T. J. COWIE, Paymaster-General, U. S. N.

**MISSISSIPPI RIVER Commission, Fourth District, U. S. Engineer Office, Queen and Crescent Building, 346 Camp Street, New Orleans, La., July 3, 1914.**—Sealed proposals for constructing and delivering the steel hull sternwheel towboat Chalmette will be received at this office until 11 o'clock A. M. August 3, 1914, and then publicly opened. Information on application. C. O. SHERRILL, Major, Engineers.

**U. S. ENGINEER OFFICE, Wilmington, N. C., June 10, 1914.** Sealed proposals for about 1576 tons of steel sheet piling and accessories will be received at this office until 12 M. July 10, 1914, and then publicly opened. Information on application. H. W. STICKLE, Maj., Engineers.

## BOND OFFERINGS

### Municipal Bonds

White Sulphur Springs, W. Va. Sealed bids will be received by the town of White Sulphur Springs, W. Va., until one o'clock P. M. Tuesday, July 14, 1914, for \$5000 6 per cent. ten and twenty-year Water and Sewer Bonds. Certified check for 10 per cent. of bid to be enclosed. The right is reserved to reject any or all bids. Assessed valuation of property is \$407,665. For further information address B. F. Dixon, Mayor, or Howard Templeton, Recorder.

## Sale of \$1,000,000 6% Drainage Bonds

Under authority of and in compliance with the provisions of the Act of the Legislature of Florida, Session 1913, Chapter 6556, Laws of Florida, the Board of Commissioners of Everglades Drainage District of Florida propose to offer for sale one million dollars six per cent. Drainage Bonds, and will receive sealed bids at their office in the State Capitol, Tallahassee, Florida, for the purchase of same on or before 10 o'clock A. M. Thursday, August 20, 1914.

The Board reserves the right to reject any or all bids.  
For full information address  
J. STUART LEWIS, Secretary,  
Tallahassee, Fla.

## Notice of Sale of School District Bonds

Ocala, Fla.  
Notice is hereby given that the Board of Public Instruction for the county of Marion, State of Florida, until 3 o'clock P. M. Tuesday, July 14, 1914, will receive sealed bids for the purchase of one or more of the eight bonds to be issued by Citra Special Tax School District Number Ten, Marion county, Florida, of the denomination of one thousand dollars each, bearing five per cent. interest, payable annually, maturing twenty years from their date. A deposit in the form of a certified check, payable to the order of the Board of Public Instruction for Marion County, State of Florida, in the sum of five per cent. thereof, must accompany each bid. The said board reserves the right to reject any and all bids.

All communications should be addressed to J. H. BRINSON, Secretary, Ocala, Florida.  
**THE BOARD OF PUBLIC INSTRUCTION FOR THE COUNTY OF MARION, STATE OF FLORIDA.**  
By J. H. BRINSON, Secretary.

## Bonds For Sale

Rockville, Md.  
The County Commissioners for Montgomery County, Maryland, will receive sealed bids for the purchase of 15 Montgomery County Bonds of \$1000 each up to 12 o'clock noon on the 28th day of July, A. D. 1914, at which time the bids will be opened by said Commissioners and the sale consummated to the highest bidder for cash if, in the opinion of the said County Commissioners, such highest bid be an adequate price for said bonds.

These bonds are in a series of 15 bonds of \$1000 each, aggregating \$15,000 and numbered from one to fifteen, both inclusive, and one of said bonds being numbered one, and being payable one year after date thereof, and one of said bonds in order of their number being payable each year until the entire issue of fifteen are fully paid.

These bonds bear interest at the rate of 5 per centum per annum, said interest being payable semi-annually on the 1st day of August and the 1st day of February in each year until the payment of the principal sum. The principal and interest being payable at the Farmers' Banking & Trust Company of Montgomery County at Rockville, Maryland.

Each bid must be accompanied with a certified check for Two Hundred Dollars, made payable to the County Commissioners of Montgomery County, Maryland.  
RICHARD T. WHITE, JR.,  
President of the Board of County Commissioners for Montgomery County, Maryland.  
BERRY E. CLARK,  
Clerk to the County Commissioners for Montgomery County, Maryland.  
JOHN A. GARRETT,  
Solicitor.

## Bonds For Sale

Rockville, Md.  
The County Commissioners for Montgomery County, Maryland, will receive sealed bids for the purchase of 22 Montgomery County Bonds of \$500 each up to 12 o'clock noon on the 28th day of July, A. D. 1914, at which time the bids will be opened by said Commissioners and the sale consummated to the highest bidder for cash if, in the opinion of the said County Commissioners, such highest bid be an adequate price for said bonds.

These bonds are in a series of 22 bonds of \$500 each, aggregating \$11,000 and numbered from one to twenty-two, both inclusive, and two of said bonds being numbered one and two, both being payable one year after the date thereof, and two of said bonds in order of their number being payable each year until the entire issue of twenty-two are fully paid.

These bonds bear interest at the rate of 5 per centum per annum.  
Said interest being payable semi-annually on the 1st day of August and the 1st day of February in each year until the payment of the principal sum.

The principal and interest being payable at the Farmers' Banking & Trust Company of Montgomery County at Rockville, Maryland.

Each bid must be accompanied with a certified check for Two Hundred Dollars, made payable to the County Commissioners of Montgomery County, Maryland.  
RICHARD T. WHITE, JR.,  
President of the Board of County Commissioners for Montgomery County, Maryland.  
BERRY E. CLARK,  
Clerk to the County Commissioners for Montgomery County, Maryland.  
JOHN A. GARRETT,  
Solicitor.

## \$40,000 5% Good Roads Bonds

Halls, Tenn.  
Sealed bids solicited by the Commissioners of Good Roads District No. 4 of the State of Tennessee on \$40,000 good roads, coupon 5 per cent. annual, bonds, maturing 30 years, but containing an option provision making them redeemable after ten years, to be opened at 2 o'clock Saturday, August 8, 1914, in Halls, Lauderdale County, Tennessee.  
A certified check for \$500 must accompany bid.

J. M. PARRISH,  
Chairman Board of Commissioners.

## BUILDINGS

### Dormitory Building

NOTICE TO CONTRACTORS.

Charleston, W. Va.  
Notice is hereby given that the undersigned State Board of Control of West Virginia will until noon on the 1st day of August, 1914, receive at its office in Charleston, W. Va., sealed bids for furnishing all materials and labor necessary to erect and complete at the Preparatory Branch of West Virginia University, Keyser, W. Va., a two-story-and-basement dormitory building. Said building to be constructed of brick and reinforced concrete.

Plans and specifications will be on file at the following places on and after July 1, 1914: Office of State Board of Control, Charleston, W. Va.

Office of Cumberland News, Cumberland, Md. Office of Preparatory Branch W. Va. University, Keyser, W. Va.

Office of the Fairmont West Virginian, Fairmont, W. Va.

All bids must be sealed, plainly addressed to the "State Board of Control, Charleston, W. Va.," and marked in a conspicuous place on the envelopes, "Bid for work at Keyser." The bid must be accompanied by a certified check for five hundred (\$500) dollars. Checks of unsuccessful bidders will be returned when contract is awarded, and check of successful bidder will be held until proper contract and bond have been executed; upon failure of bidder to execute which, his check will be retained by the State Board of Control to cover expenses of re-advertising and re-letting.

Immediately after the contract is awarded the successful bidder will be required to execute a proper contract with guaranty company bond in a penalty equal to the amount of the contract price, said bond to be conditioned for the construction and completion of the work as set forth in the plans and specifications.

All bids must be made on forms filed with the specifications, and which will, on request, be mailed to any bidder. The State Board of Control reserves the right to reject any and all bids.

STATE BOARD OF CONTROL.  
By J. S. Lakin, President.

## Temple

Monroe, La.  
Proposals for the erection and completion of a new Temple for the Congregation B'Nai Israel of Monroe, La., will be received at the office of the Young Men's Hebrew Association up to eight o'clock P. M. August 6, 1914.

Proposals must be addressed to Mr. Saml. Kaplan, Chairman Building Committee, Monroe, La., and delivered in sealed envelopes having marked thereon "Proposals for New Congregation B'Nai Israel Temple." To insure uniformity these proposals must be on the approved form furnished by the Architects and must be accompanied by a certified check amounting to 5 per cent. of the amount of the bid. No interlineations or substitutions will be permitted in proposal forms.

Separate proposals are requested for the general contract, exclusive of trim and decoration work in Temple Auditorium, heating, plumbing and lighting.

The successful bidder or bidders will be required to enter into contract with the owner within forty-eight hours of the awarding to him (or them) of the contract, and to furnish, according to law, bond amounting to 50 per cent. of contract, from an approved, acceptable and authorized surety company, guaranteeing a proper performance of the work. The contract to be signed will be what is known as a "Uniform Contract," and will provide for payments on account as the work progresses of 90 per cent. of acceptable labor and materials erected in the building or delivered at the site, and will further exact a forfeit agreement in the event of failure to conclude the contract in the time stipulated of \$25 per diem for each and every day that the contractor shall be delinquent. Time for completion of work must be designated in proposals.

The certified checks of selected bidders will be immediately returned to them on conclusion of contract with the accepted bidder or bidders. In the event of failure of any bidder to enter into contract or give bond as herein proposed, after his (or their) proposal shall have been accepted, then the certified check accompanying his (or their) proposal shall be forfeited to the owner, represented by Mr. Saml. Kaplan, Chairman Building Committee, to whom it is made payable, as liquidated damages.

The owner reserves the right to reject any or all bids.

Complete copies of plans and specifications may be had on application to Mr. Saml. Kaplan, Chairman Building Committee, Monroe, La., or to the Architects, Stevens & Nelson Co., Second Floor, Liverpool & London & Globe Building, New Orleans, La.

## Y. M. C. A. Building

Sealed bids on the construction of the Y. M. C. A. Building of Tulsa, Oklahoma, will be received at the office of the Y. M. C. A., 412 Clinton Building, up to 10 A. M. July 28, 1914. Four-story-and-basement building, fireproof, 90x130 feet. Drawings and specifications may be had from the Architects, Shattuck & Hussey, 19 South La Salle Street, Chicago, Ill., or Y. M. C. A. Office, Tulsa.

## PAVING AND GOOD ROADS

### Notice to Road Contractors

New Martinsville, W. Va.  
Notice is hereby given that sealed bids will be received by the County Court of Wetzel County, West Virginia, at the Courthouse in the town of New Martinsville, West Virginia, up to 12 o'clock noon on the 18th day of July, 1914, for the building and improvement of approximately twenty-two miles of dirt road in Grant District in said county.

Plans and specifications for said work, form of proposal, contract and bond required are now on file in the office of F. W. Parsons, County Road Engineer, New Martinsville, W. Va., and in the office of L. E. Lantz, Chairman of the Grant District Road Committee, Jacksonburg, W. Va., as well as in the office of the Clerk of said County Court, in the town of New Martinsville.

Bidders must satisfy themselves as to the conditions and amount of road to be built, and bids must be made for each mile separately. Bids may be also made for the entire mileage.

Each bid must be accompanied by a draft or certified check on a responsible bank or trust company, payable to the order of the Sheriff of Wetzel county, for five per cent. of the amount of the bid, as guarantee that bidder will enter into contract for said work and execute bond as required if his bid is accepted.

Each bid must be made on blank form adopted by said Court, copies of which may be obtained from the County Road Engineer or from the Chairman of said Grant District Road Committee.

The County Court shall have the right to accept the bid of the proposer and award the contract for any one or more miles of road bid for, unless the bidder specifically sets forth in his bid that the same shall not be done.

Bond in a penalty equal to the amount of the bid, with surety to be approved by said Court, will be required with each contract.

The right is reserved to reject any and all bids.

S. MYERS,  
Clerk County Court,  
Wetzel County, W. Va.

## State Highway

STATE OF MARYLAND,  
STATE ROADS COMMISSION,  
601 Garrett Building,  
Baltimore, Md.

### NOTICE TO CONTRACTORS.

Sealed proposals for building 7 sections of State Highway, aggregating about 26.62 miles in length, as follows:

Contract No. A-10—ALLEGANY COUNTY: One section of road from Green Ridge to Washington county line, about 7.88 miles in length. (Resurfacing.)

Contract No. A-11: One section of road from near Cumberland to Nave's Farm Road, about 1.74 miles in length. (Resurfacing.)

Contract No. AA-6—ANNE ARUNDEL COUNTY: One section of road from Birdsville to South River, about 4.55 miles in length. (Gravel.)

Contract No. 0246—FREDERICK COUNTY: One section of road through Middletown, about 1.36 miles in length. (Macadam or Concrete.)

Contract No. G-8—GARRETT COUNTY: One section of road through Grantsville, about .85 mile in length. (Macadam or Resurfacing.)

Contract No. S. M.-8—ST. MARY'S COUNTY: One section of road from St. Mary's City to Ridge, about 6.74 miles in length. (Gravel Surfacing.)

Contract No. T-8—TALBOT COUNTY: One section of road from Easton toward Trappe, about 3.50 miles in length. (Macadam or Concrete.)

Will be received by the State Roads Commission at its office, 601 Garrett Building, Baltimore, Md., until 12 M. on the 14th day of July, 1914, at which time and place they will be publicly opened and read.

Bids must be made upon the blank form contained in the book of specifications. Specifications and plans will be furnished by the Commission upon application and cash payment of \$1 for each contract, as hereafter no charges will be permitted.

No bid will be received unless accompanied by a certified check for the sum of five hundred (\$500) dollars, payable to the State Roads Commission.

The successful bidder will be required to give bond and comply with the Act of the General Assembly of Maryland respecting contracts.

The Commission reserves the right to reject any and all bids.  
By order of the State Roads Commission,  
this 26th day of June, 1914.

O. E. WELLER,  
Chairman.  
WM. L. MARCY,  
Secretary.



## Road Grading and Street Improvement

Franklin Township, Macon County, North Carolina.

On and after July 10, 1914, the Highway Commission of Franklin Township will receive bids for the grading of approximately ten miles public highway and 8000 square yards bituminous macadam paving; also the construction of about 2500 feet concrete curb and brick gutter; also for furnishing and laying terra-cotta drain pipe and the construction of concrete culverts and bridges.

Certified check for \$500 will be required. Plans and specifications may be seen at the Bank of Franklin, Franklin, N. C. Commissioners reserve the right to reject any and all bids.

E. H. FRANKS, President.  
Franklin, N. C.

## WATERWORKS AND SEWERS

### Water-Works Station, Filters, Machinery and Extension

La Grange, Georgia.

Proposals will be received by the undersigned until 2 P. M., July 21, 1914. The work will include supplying all materials and labor necessary to construct water-works, with all appurtenances, including filters, two brick stations, reinforced concrete, coagulating and clear water basin, transmission line and electric pumping machinery.

Drawings and details may be examined and blank form of specifications and bid sheet be obtained of T. J. Harwell, City Clerk, or the Consulting Engineer, Atlanta, Georgia.

A deposit of ten (\$10) dollars will be required for each set of plans, which will be refunded on the return of the plans in good condition.

Each proposal must be accompanied by a certified check in the sum of five (\$5) per cent. of the amount bid as evidence of good faith upon the part of the bidder.

The City reserves the right to reject any and all bids, or, waiving formalities, to accept any which may seem to it to be the best for the City of La Grange.

J. D. EDMUNDSON, Mayor,  
La Grange, Ga.

JAMES NISBET HAZLEHURST,  
Consulting Engineer,  
Atlanta, Ga.

### Notice to Sewer Contractors

Blytheville, Ark.

Sealed proposals will be received by the Board of Commissioners of Sewer District No. 1, Blytheville, Ark., until 1 P. M., July 30, 1914, and then publicly opened. For the construction of a complete sanitary sewer system, including sewage treatment works, consisting of the following quantities:

6000 feet of 15" sewer cut 8'-18".  
3500 feet of 12" sewer cut 6'-12".  
3000 feet of 10" sewer cut 4'-10".  
52000 feet of 8" sewer cut 4'-10".

70 Manholes.  
60 Flush tanks.  
Pumping pit.  
Electrical driven pumping outfit (2 units.)

Sewage treatment works consisting of contact and sand filtration beds with all necessary apparatus.

All work to be absolutely watertight and free from all infiltration of ground water.

The above quantities are approximate and are subject to change.

Plans can be seen and specifications procured after July 15, 1914, in the office of A. C. Lange, Secretary, Board of Commissioners, Blytheville, Ark., and at the office of R. C. Huston, chief engineer, Room 630-32, Exchange Building, Memphis, Tenn.

No bid will be received unless accompanied by a certified check in the sum of \$3000. The right is reserved to reject any and all bids.

The legal proceedings pertaining to the issuance of the bonds have been completed and approved, and the contract will be awarded subject to the sale of the bonds.

BOARD OF COMMISSIONERS.  
T. J. MAHON, President.

W. N. FIELDS,  
A. C. LANGE, Secy. and Treas.  
R. C. HUSTON, Chief Engineer.

## MISCELLANEOUS

### Garbage Incinerator

Clarksdale, Miss.

On Thursday, July 23, 1914, the Commissioners of the City of Clarksdale, Miss., will open sealed proposals for building a crematory or garbage incinerator to serve a population of about 6000.

Each bidder will furnish his plans and specifications with his bid, accompanied by a certified check or bidder's bond for \$200, payable to the City of Clarksdale.

Address bids to M. W. Purnell, City Clerk.  
M. J. BOULDIN,  
Mayor.

### Materials

Killeen, Texas.

Bids will be received by the Mayor and City Council of Killeen, Texas, and publicly opened on the 13th day of July, 1914, for the purchase by said city of—

1500 feet of 8" cast-iron pipe.  
550 feet of 6" cast-iron pipe.  
8000 feet of 4" cast-iron pipe.  
4 8" gate valves.  
1 6" gate valve.  
9 4" gate valves.  
20 fire hydrants.  
1 motor-driven deep-well pump.

Complete list of material requirements can be had by addressing M. Griffin O'Neil & Sons, Praetorian Building, Dallas, Texas.

## Marine Railway—Bridges—Spillway

SPRING LAKE DRAINAGE AND LEVEE DISTRICT, TAZEWELL COUNTY, ILLINOIS.

Sealed bids will be received until 11 o'clock A. M., July 24, 1914, by the Commissioners of the Spring Lake Drainage and Levee District, at the office of Attorney J. M. Powers, in Pekin, Illinois, covering the following work:

First—A Marine Railway for transferring boats across the drainage district levee, including the foundations, tracks, structural steel work, and gasoline-engine-driven power plant.

Second—A Girder Draw Bridge and an I-Beam Highway Bridge.

Third—A Sheet Piling Spillway with brush and rock apron.

For further information address Harman Engineering Co., Civil, Mechanical and Electrical Engineers, Peoria, Illinois.

### Dredging

NOTICE TO CONTRACTORS.

New Orleans, La.

Sealed proposals will be received by the Board of Commissioners of the Port of New Orleans, La., at their offices, Suite 200 New Orleans Court Building, until July 20, 1914, at 3 o'clock P. M., and then publicly opened, for dredging in the Mississippi River, filling and clearing site for cotton warehouses and terminal facilities between Mississippi River and Leake avenue and between Napoleon avenue and Soniat street, New Orleans, La.

Estimated amount of filling, 2,000,000 cubic yards.

Estimated amount of clearing, 80 acres. Deposit: Five thousand (\$5000) dollars cash or certified check.

Payments: Monthly.

Bond: One-half estimated amount of contract.

Plans and specifications are on file at the office of Ford, Bacon & Davis, Engineers, 921 Canal street, New Orleans, by whom full sets will be furnished on deposit of ten (\$10) dollars. Said deposit will be refunded upon the return of said set in good condition.

The right is reserved to reject any and all bids.

ERNEST M. LOEB,  
President.

### Pumping Station and Equipment

NOTICE TO BIDDERS.

Memphis, Tenn., June 15, 1914.

Sealed proposals will be received up to 12 o'clock noon Tuesday, July 14, 1914, at the office of C. C. Pashby, City Clerk, for furnishing all labor, tools, hauling for and materials necessary for erecting a building to be used as a

### PUMPING STATION.

The work will embrace excavation for foundation, driving foundation piles and erecting a concrete and brick building approximately 60 ft. wide by 160 ft. long and 99 ft. high from the bottom of the foundation concrete to the top of the roof.

The lower one-half of the building will be of concrete, with a reinforced concrete floor to carry the pumping machinery; the upper one-half will be of brick, with steel truss roof.

There will also be included in the construction a discharge basin approximately 25 ft. wide by 130 ft. long, 350 ft. of horse-shoe-shaped culvert 15 ft. by 25 ft., and a suction basin.

A certified check in the sum of Five Thousand Dollars (\$5000), deposited in accordance with the terms of the specifications, will be required of each bidder.

### ELECTRICAL MACHINERY.

Sealed bids will be received up to 12 o'clock noon Tuesday, July 14, 1914, for furnishing and erecting the following electrical machinery and auxiliaries:

Four (4) 750 H. P. Wound Rotor, Induction Motors, with horizontal shaft.  
Two (2) 300 H. P. Wound Rotor, Induction Motors, with vertical shaft.

One (1) Complete Switchboard for the control of the above motors, with all wiring connections.

Three (3) 667 K. V. A. Single-Phase Transformers.

Other Auxiliaries.

A certified check in the sum of Twenty-five Hundred Dollars (\$2500), deposited in accordance with the terms of the specifications, will be required of each bidder.

### PUMPING MACHINERY.

Sealed proposals will be received up to 12 o'clock noon Tuesday, July 14, 1914, for furnishing and erecting the following machinery and auxiliaries:

Four (4) Double Suction, Horizontal Shaft, Centrifugal Pumps, capacity each 300 cu. ft. per second against a normal head of fifteen feet.

Two (2) Vertical Shaft, Single Suction, Centrifugal Pumps, capacity each 80 cu. ft. per second against a normal head of twenty-two feet.

Complete suction and discharge pipes for above pumps.

One (1) Twenty (20) Ton Motor Hoist Hand-Operated Traveling Crane.

Two (2) Vertical Shaft Pit Pumps.

Two (2) Rotary, Motor-driven Vacuum Pumps of 400 cu. ft. per minute capacity each.

Together with necessary piping and valves. A certified check in the sum of Twenty-five Hundred Dollars (\$2500), deposited in accordance with the terms of these specifications, will be required of each bidder.

The contract for electrical machinery, the contract for the pumping machinery and the contract for the building will be let separately, each as a whole.

Plans and specifications may be had from J. H. Weatherford, City Engineer, Room 5, Court House, Memphis, Tenn.

A deposit of Fifty Dollars (\$50) will be required on each set of plans and specifications, which will be refunded on the surrender of the same.

By order of the Board of Commissioners of the City of Memphis.

E. H. CRUMP, Mayor.  
Attest: C. C. PASHBY, City Clerk.

## SAMUEL T. FREEMAN & COMPANY AUCTIONEERS

Established November 12, 1805

1519-21 CHESTNUT ST., PHILADELPHIA, PA.

## Peremptory Auction Sale VALUABLE MACHINERY and EQUIPMENT

Formerly of the

R. C. H. CORPORATION - Bankrupt  
DETROIT, MICH.

Tuesday and Wednesday, July 21st and 22nd, 1914

At 10 o'clock A. M. each day

On the premises

The sale includes large Machine Tools, Engine Lathes, Drill Presses, Universal Milling Machines, Turret Lathes, Electric Welding Machines, Grinders, Gleason Gear Cutters, Screw Machines, Shapers, Hack Saws, four 2500-pound Drop Hammers, Trimming Presses, Annealing Furnaces, Belting, an enormous supply of small tools such as twist drills, reamers, gauges, cutters, 400 tons commercial iron and tool steel, etc. Machine tools and small tools both to be sold in separate lots only.

Also Trustee's Sale of

Real Estate, Cars, Good Will, Drawings, Patterns, Repair Parts, etc., of the

HUPP-YEATS ELECTRIC CAR CO.

DETROIT, MICH.

Wednesday, July 22nd, 1914

At 12 o'clock M.

On the premises

The sale of the Hupp-Yeats Electric Car Co. will be in three parts: 1, the real estate; 2, the good will, repair parts and right to supply same, patterns, jigs, dies of the Hupp-Yeats Electric Car Co. as a going concern; 3, nine Hupp-Yeats Electric Cars, each separately.

Catalogues will be mailed and all information given on application to the auctioneer.

SAMUEL T. FREEMAN & CO.

1519-21 Chestnut St.

PHILADELPHIA, PA.

## INDUSTRIAL NEWS OF INTEREST

Items of news about industrial, railroad or financial interests, building operations, construction work, municipal improvements, or the sale of machinery or the letting of contracts in the South or Southwest, are invited from our readers whether they are advertisers or subscribers or not. We invite information of this character from readers in the North and West about their Southern business operations, as well as from Southern readers. News of value will be published just as readily when from non-advertisers as from advertisers.

### Ross Hydrant Heads for Cincinnati High-Pressure Fire System.

The Cincinnati Fire Department has adopted the Ross portable hydrant head for use in the city's new high-pressure fire system. These heads are similar to the ones used in the Baltimore high-pressure service. They have five openings: one on top to which a monitor or deluge nozzle can be attached, and four with Ross operating and regulating valves, whereby the pressure is controlled from 50 pounds up to the full pressure of 300 pounds. These heads are made by the Ross Valve Manufacturing Co. of Troy, N. Y.

### A Collapsible Crate for Fruits and Vegetables.

A collapsible wooden crate which has self-locking top and bottom, in which it is not necessary to use rope or nails to make the package tight, has been patented by C. E. Weed, and is now being manufactured by the Weed Lumber Co., Weed, Cal. The top and bottom when locked holds the crate when partially filled as well as when it is entirely full. It is adapted to the packing and shipping of apples, onions, potatoes, and other vegetables and fruit requiring strong and well-ventilated packages. An advantageous feature is the cheap rates obtainable in transportation for the return of this collapsible crate.

### Automobile Plant for Sale.

The real estate, automobiles, good will, drawings, patterns, repair parts and machinery of the Hupp-Yeats Electric Car Co., known as the R. C. H. Corporation, of Detroit, Mich., will be sold at trustees' sale on the premises, 10 A. M. July 21 and 22, 1914. The sale will be in three parts: First, the real estate; second, good will, repair parts, patterns and machinery, including machine tools, engine lathes, drill presses, drop hammers, Universal milling machines, turret lathes, Gleason gear cutters, screw machines, etc.; third, nine Hupp-Yeats electric cars, each separately. Information and catalogues on the sale will be furnished by Samuel T. Freeman & Co., auctioneers, 1519 21 Chestnut St., Philadelphia, Pa.

### Agency for Deane Steam Pumps.

The Hughes Specialty Well-Drilling Co. of Charleston, S. C., has secured the South Atlantic States agency of the Deane Steam Pump Co. of Holyoke, Mass., for the sale of special pump machinery. The Hughes Co. is prepared to drill wells suitable for these pumps, which are of capacities from 140 to 2300 gallons per minute, taking 8 to 26-inch wells, respectively. The well-drilling company has recently completed a contract for two 16-in. by 450-ft. wells at the Waycross, Ga., shops of the Atlantic Coast Line Railroad. One of the wells is fitted with a Glendora triplex plunger artesian well pump, manufactured by the Deane Steam Pump Co., which is fully described in its bulletin "D-225." It is claimed the pump will deliver in useful work 85 per cent. of the power applied to the pulley and that it is notable for its reliability, efficiency, capacity, accessibility and uniformity of flow and load.

### Girtanner - Davies Ash Removing System.

A system for the economic and efficient removal of ashes in boiler plants has been developed by Girtanner-Davies, a firm of engineers and contractors, Chemical Bldg., St. Louis, Mo., and is in operation in a number of plants. The system is composed of cast-iron pipes of suitable lengths, joined by flanges which are specially packed to make them air-tight. Hoppers for receiving the ashes are located at convenient places near the ash pits. The ashes are moved through the conveyor by steam issuing from a nozzle pointed in the direction of the flow. Turning on the steam tends to create a vacuum, which produces a flow of air through the pipe, which will carry ashes at the rate of about 200 pounds per minute. The hopper discharges into a car, ash bunker, or as may be desired. It is stated at one of the installations that the ashes are

carried a distance of over 300 feet, and that in another they are elevated 97 feet. The firm has distributing agents in the principal cities, including Louisville, Ky.; Memphis, Tenn.; Kansas City, Mo.; Chattanooga, Tenn., and other cities. Full information regarding the system may be obtained by addressing the firm.

### Sales of Gas and Steam Engines.

The C. & G. Cooper Co. of Mt. Vernon, O., report considerable activity in its gas and steam engine departments. Recent sales made by the company include the following equipment: Two compressor units, consisting of 21½x36-inch single tandem Cooper gas engines, direct-driving Ingersoll-Rand Hurricane type compressor cylinders, manufactured by the Ingersoll-Rand Co., 11 Broadway, New York, which will deliver about 14,600,000 cubic feet of free gas per 24 hours against a pressure of 275 pounds, for the Columbia Gas & Electric Co.'s pumping station at Branchland, W. Va.; one 24x48-inch twin tandem compressor unit to also drive Ingersoll-Rand Hurricane type compressor cylinders, to be installed at the Pavonia (O.) pumping station of the Logan Natural Gas & Fuel Co.; a 21x30-inch single tandem Cooper gas engine, direct-connected to an alternating current generator, for the Altoona Portland Cement Co., Altoona, Kan.; one 16x36-inch simple Corliss engine, direct connected to a 200 K. W. generator; one 24x42-inch Corliss engine, direct-connected to a 400 K. W. generator, and one 24x40x42-inch cross compound non-condensing Corliss engine, direct connected to a 600 K. W. generator, to furnish light and power for the Conway Bldg., being constructed by the Marshall Field estate at Chicago.

## TRADE LITERATURE.

### Universal Portland Cement Co.'s "Concrete Roads."

Ten fundamental principles in concrete road construction, adopted by the National Conference on Concrete Road Building, are listed in the May issue of "Concrete Roads," published by the Universal Portland Cement Co., 208 S. LaSalle St., Chicago, Ill. The publication contains illustrations and description of the first concrete road constructed in Cook county, in which Chicago is located, and extracts of a message on the subject of State highways by Governor Glynn of New York, delivered to the New York Legislature, and also letters recommending the construction of concrete roads.

### Abrasive Grinding Wheels.

Abrasive wheels made of "Boro-Carbene," a material possessing the required grinding qualities, are now made by the Abrasive Material Co. of Philadelphia, Pa. In a supplement to catalogue 5, issued by the company, it is stated that wheels made of this material are fast and free cutting, durable, and produce a maximum amount of work. Boro-Carbene is the trade name given by the company to alumina in crystalline form, produced by fusing bauxite by intense heat in the electric furnace by the arc process. It is stated that these wheels are used extensively in the various lines of grinding work and are especially adapted to grinding materials of high tensile strength, including steel.

### Corrugated Culvert Co.'s Products.

Among the manufactures of the Corrugated Culvert Co., Moberly, Mo., is the self-adjustable water trap which is illustrated and described in a folder issued by the company. These water traps are made of heavy gauge American ingot iron and are fitted with double-acting hinges so that they will open and close automatically, depending on the direction of the water pressure. The water trap permits water to flow out into the main stream, and in the event of a rise in the water its pressure closes the trap and prevents the water from flowing back through the levee. Other products of the company include heavy corrugated iron stock tanks, round corrugated wagon troughs, etc. The rain water filter has the

filtering apparatus at the bottom of the tank, so that it is easily reached and any impurities that may be brought in by the water are held in position, where they may be easily removed.

### Ice-Making Machinery.

Much information on the subject of ice-making, distilling and purifying water, and the use of refrigerating machinery in general, is contained in catalogue "O" issued by the Frick Company, Waynesboro, Pa. The Frick horizontal double-action and Frick absorption machine of the latest types are now being furnished and installed whenever required. Frick ammonia fittings and supplies and the Frick system for making raw-water ice are referred to in the publications of the company. A separate booklet on "Ammonia Fittings and Supplies" is published. These publications will be sent to persons interested in ice-making machinery on request to the company.

### Moyer Patented Concrete Joint.

The patented Moyer concrete joint protection plate as developed by Albert Moyer, 250 5th Ave., New York, is illustrated and described in a folder recently issued. It is stated that construction joints as required in concrete roads are provided by the Moyer steel joint plate, which protects the joints and is sold by the linear foot or by the ton. The plate is made of open-hearth steel, designed to wear down at the same rate as the concrete, and to protect the edge of the concrete so that it will not spall. It is stated that no installation device or machine is required in placing it. The legs are bent down and the tongues are bent outward by means of a short piece of pipe. The folder and other information will be sent to interested persons on request to the above address.

### Ashley System of Sewage Disposal.

Making use of the bacterial changes which take place under sewage treatment without chemicals, Burton J. Ashley, sanitary engineer of Chicago, Ill., is introducing the Ashley System in Birmingham, Ala., and vicinity with J. H. Mayer, 1818 Third Ave., as Southern representative. A special study is made of design and construction of the complete purification and disposal plants for individual buildings, residences, schools, clubs, hotels, institutions and communities which have water-works and plumbing, but are not accessible to sewers. The work is strictly sanitary engineering, and Mr. Mayer is striving to improve the sanitary conditions by giving information to the public on the need of better sanitary facilities in unsewered districts. His work is applied to all localities in the South, from which inquiries may be received.

### Newton Milling Machines.

Catalogue No. 43, recently issued by the Newton Machine Tool Works, Inc., 23d and Vine Sts., Philadelphia, Pa., describes and illustrates milling machinery which has been developed by the company after more than thirty years of successful operation. It contains illustrations, descriptions and methods of drive for many types of horizontal milling machines, and includes other machines built by the company of the following types: Cylinder and valve chamber, locomotive rod and toolroom boring machines; combination type, bar type, vertical steel foundry type and crank-shaft cold sawing machines; portable, crank drive and rack drive slotting machines; radius-link, multiple spindle, vertical and duplex milling machines; radius-link and surface grinding machines, and rotary and crank planers. Tables of sizes and capacities and price lists are given with each type.

### Noiseless Air Compressors.

The air and gas compressors and vacuum pumps manufactured by the Bury Compressor Co., Erie, Pa., are illustrated and described in catalogue 44, recently issued by the company. Several illustrations of actual installations of the patent two-cylinder and three-cylinder variable volume air compressors are included. Among the features of Bury compressors are the patented cushion poppet intake and discharge valves, which render the compressors noiseless in operation; also the automatic pneumatic force-feed oiling system. Among the illustrations is an installation at the Hazel Atlas Glass Co., Clarksburg, W. Va., and another at the Owens Eastern Bottle Co., Clarksburg, W. Va. Other important installations in large industrial plants throughout the country are shown. Specifications for the general construction of the Bury compressors are included in the catalogue, which will be sent to persons interested in compressor equipment upon request to the company.

### Caterpillar Tractor for Good Roads.

In bringing to the attention of good roads builders and highway engineers the various ways in which Caterpillar tractors, made by the Holt Manufacturing Co., Peoria, Ill., may be used in the construction of roads, streets, highways, railroad grades, etc., the company has issued an illustrated folder showing the tractor in various forms of work. The uses include hauling gravel, rock and other materials in wagon trains; pulling scrapers, drags and graders; railway grading operations, operating crushers and mixers; hauling logs and general freight, municipal work, plowing, threshing and other general work. The wagon trains include Troy dump wagons, made by Troy Wagon Works, Troy, O. The many advantages of this form of tractor are stated and information regarding its use is given. The folder will be sent to interested persons on request.

### Useful Hand Press for Blacksmiths.

F. M. Blount of Noma, Fla., has developed a press for enlarging holes in horseshoes by means of which practically half the time can be saved over the old method. The factory-made horseshoes, having small holes in them, require a considerable amount of work in enlarging the holes in the old method by heating them and expanding them by using a small punch. By using this press the work is done cold, thus saving time and fuel. In operation the horseshoe is inserted in the horizontal slot of the press without being heated, and the expanding tool is forced into the nail holes which are to be enlarged. The tip of the expanding tool descends into an oil receptacle, and as the tool is immersed in oil at each downstroke, it is kept well oiled to prevent temper of tool from being drawn by heat generated by friction contact. The hand lever is forced upward to pull out the tool from the expanded hole, while the horseshoe is prevented from rising by the stripper.

### Capacity of Plant Increased.

Notwithstanding the prevailing dull conditions reported by many manufacturers, the Terry Steam Turbine Co., Hartford, Conn., announces that it has finished one of the most successful months in its history in the point of orders received. Additional machine tools have been installed, increasing the capacity of the plant approximately 25 per cent., in order to properly take care of the increased business and possible future business. The company has recently issued a folder on Terry vertical turbines. The turbine can be completely dismantled without disturbing alignment or steam and exhaust connections. It is built in sizes from 5 to 600 H. P., and is adapted for driving deep-well pumps, condenser circulating pumps, forced-draft blowers, etc. A booklet on "Testing Small Steam Turbines" has also been issued. These booklets, together with other literature describing Terry steam turbines, will be sent to interested persons on request to the company.

### Flory Hoisting and Dredging Machinery Catalogue.

Illustrations and descriptions of standard types of improved hoisting engines and machinery, dredging, logging and slate quarrying and finishing machinery are contained in catalogue No. 25 issued by the S. Flory Manufacturing Co. of Bangor, Pa. The company states its facilities for manufacturing hoisting and cableway machinery of every description have been increased, and that it invites inquiry for specifications for other than standard types. The 180-page catalogue shows illustrations and gives description of construction and tables of sizes, prices, etc., of double cylinder, single and double-friction drum engines; and quadruple friction drum engines, with and without boiler; double cylinder friction drum, link-motion engines; reversible swinging engines; double-cylinder six-spool erecting engines; Flory standard hoisting engines mounted on wagon; electric hoists; stationary engines, and slate machinery, including rubbing beds, slate and stone sawing machines, planing machines, hand-power slate grooving machines, slate-dressing machine, quarry trucks, Flory power slate-drilling and counter-sinking machine and excavating and dredging machines and logging machinery of all kinds. Special attention is called in the catalogue to electric hoists, which are made with any number of drums and suitable motors for quarry and mine duty, and the suspension cableway system of hoisting and conveying is described and illustrated with machinery in actual operation.



## Special Advertisements of General Interest.

### RECEIVERS' SALE

OF

#### Valuable Paving Plant

CONSISTING OF LEASEHOLD PROPERTY WITH EXCELLENT WATER-FRONT FACILITIES, NO. 1210 BLOCK STREET, OCCUPYING ENTIRE BLOCK, KNOWN AS THE FILBERT PAVING & CONSTRUCTION COMPANY'S PLANT.

ALSO,

ALL THE CHATTELS, CONSISTING OF LARGE CONCRETE MIXER, 5 AND 10 TON STEAM ROLLERS, HOISTING ENGINE, ORANGE PEEL BUCKET, SAND, STONE, ASPHALT, OFFICE FURNITURE, ETC.

By virtue of a decree of the Circuit Court of Baltimore City, the undersigned Receivers will sell by public auction on the above premises, on Tuesday, July 14, 1914, at 10 o'clock A. M., all that lot of ground and improvements lying in the City of Baltimore and described as follows:

Beginning for the same at the northwest corner of Point and Block streets, thence westerly on Block street about 264 feet 9 inches to Dock street; thence northerly on Dock street about 125 feet 8 inches; thence easterly still binding on Dock street about 261 feet to Point street; thence southerly on Point street about 190 feet 6 inches to place of beginning. Subject to \$900 ground rent.

Improved by a complete asphalt plant, including one 180 H. P. engine with two boilers, underground conveyor, double-track elevated railway, and derrick with engine and boiler, clamshell buckets, pumps, agitators, stables, storage-houses, office building, etc.

Terms of sale for the above property: One-third cash, balance in six and twelve months, or all cash, at the option of the purchaser; deferred payments to bear interest from the day of sale and to be secured to the satisfaction of the receivers. A deposit of \$1000 will be required at time of sale.

Immediately after the sale of the above property we will sell the following chattels:

Large concrete mixer, 1 10-ton steam roller, 1 5-ton steam roller, 1 National hoisting engine, lot railroad dump trucks, 5 patent dump wagons, 3 carts, 1 dray, wheelbarrows, 2 75 H. P. boilers, granite crusher, cube mixer, 3 fire wagons, derrick, lot iron tanks, orange peel bucket, lot old and new Belgian blocks, asphalt jams, 1 Foote mixer, stone hand roller, iron hand roller, concrete barrows, concrete gutters, lot granite, lot stone curbing, lanterns, rakes, shovels, brooms, bricks, clumps, screw jacks, asphalt cutters, rammers, gasoline lamps, lot sandstone, lumber, scrap iron, tons of asphalt, scow, lot harness, etc., etc.

Terms of sale for the above chattels: Cash.

We will first offer the leasehold property and the various chattels separately and reserve the bid, after which we will offer the leasehold property and all the chattels as a whole. If the bid on the whole (leasehold property and chattels) exceeds the aggregate as offered separately, the entire property will be sold as a whole; otherwise it will be sold separately to those who had been the highest bidders.

HENRY B. WILCOX,

ISAAC S. FILBERT,

JOHN B. A. WHEATLE,

Receivers.

PATTISON &amp; GAHAN, Auctioneers.

#### COAL TAR FOR SALE

A Bargain

3000 one gallon square labeled and sealed tins of pure Coal Tar for sale at 10c. per tin, f. o. b. Richmond, Va. (Now packed and ready for shipment—17 tins in a barrel.)

American Mfg. & Refining Company  
RICHMOND, VA.

#### Natural Gas Four Cents

for Industries at

HENRIETTA, TEXAS

Domestic Gas 20 cents. Three Railroads, Water, Low Taxes, Healthful. Write  
HENRIETTA BOOSTER CLUB

### USED MOTOR CARS AND TRUCKS

ASK FOR LATEST LIST TODAY

MAR-DEL MOBILE CO.

BALTIMORE, MD.

REFERENCES—BRADSTREET OR DUN.

### Stop That Rust With Corol

"Corol" will protect your machinery, tools, etc., against rust and corrosion. Gives thin but impervious coating. Very economical, because goes five times farther than slush or other compounds. Does not rub off, and even scratched spots will not rust.

#### Big Users Recommend It

Krupp of Germany uses it to ship big guns, crank shafts, etc. Erie Forge Co., Erie, Pa., says: "Used Corol 18 months with very good results on shipments of finished steel forgings. Never had complaint rust or spotting. More economical than slush formerly used." Hill, Clarke & Co., Chicago, say: "Used it a year and find it entirely satisfactory. Cheaper than slushing grease and will not rub off during shipment."

#### Send For a Trial Order

Gal. cans, f. o. b. Chicago, \$1.65 each  
5-gal. cans, f. o. b. Chicago, \$1.60 gal.  
50-gal. lots, f. o. b. Chicago, \$1.50 gal.

Guaranteed Satisfactory or  
Money Back.

Trial  
Can 50c.

Corol Sales Co. 1450 Fisher Bldg.,  
CHICAGO

#### THE CONTROLLING INTEREST

IN AN

### OLD ESTABLISHED BUSINESS FOR SALE

THE COMMON STOCK EARNED 50% IN 1913

Orders now on the books indicate a better business for 1914.

Owing to ill-health and reluctantly acting upon the urgent advice of his physician, a client has instructed me to offer for immediate sale the controlling interest in a

\$400,000.00

#### TEXTILE and GARMENT MFG. CORPORATION

This is the largest, most important and best-known concern in this line in the United States. Organized in 1900 with a capital of only \$5000, it has grown to its present proportions of \$400,000 entirely out of earnings, besides paying very large cash dividends to its stockholders.

It has the most perfectly efficient organization in this country. The factory manager, sales manager, and heads of departments are all stockholders who have grown up in the business. They have made the past great success possible and are well equipped to make the future even better, so that the purchasers of this stock can step into a well-managed and very profitable business. This is a rare and unusual opportunity for a man to start his son in a very interesting, clean and profitable industry.

This business has just been appraised and the books audited by one of the best-known public appraisal and auditing companies. This report is open to inspection. The company has always enjoyed the highest commercial rating, and the highest bank and commercial references will be supplied upon request.

Full details upon request. Correspondence solicited and inspection of the plant invited.

T. S. SPRAGUE, Investment Securities,

1802 Ford Building, Detroit, Michigan.

### A RARE OPPORTUNITY

SALE OF

## Michigan Hardwood Timber Lands

Comprising Probably the Finest Hard Maple and  
Gray Elm Timber Now Standing

The lands in Michigan belonging to the late David Ward, not disposed of by the trustee under the existence of the trust created by the residuary devise of his will, have been ordered by decree of the Circuit Court of the County of Bay, in Chancery, in a suit for the partition thereof therein pending, to be sold by a Circuit Court Commissioner in and for the County of Bay, Michigan, at public auction to the highest bidder, at the front door of the courthouse in Bay City, Mich., on the 4th day of August, A. D. 1914, at 10 o'clock A. M.

Some 7000 acres and upwards of the timbered lands included in said sale are splendidly timbered with a fine quality of hard maple and gray elm, with a sprinkling of other varieties of timber. These lands were personally selected by the late David Ward upwards of a quarter of a century ago, and were especially selected for the excellent quality of the timber thereof, at a time when opportunity was available to select hardwood of these varieties as good as the very best that originally stood in Michigan, and they are practically the last offering of hard maple and gray elm timber lands selected under such conditions.

All of these lands are very accessible to the Detroit & Charlevoix division of the Michigan Central Railroad, while part of them are also accessible to the grand Rapids & Indiana Railroad, the Manistee & Northwestern Railroad and the East Jordan & Southern Railroad.

Aside from the timbered lands, some 25,000 acres of denuded lands, and lands the timber on which has been heretofore sold and conveyed, will be offered at this sale, and also the sawmill plant, buildings and appurtenances at Deward, Crawford County, Mich., built and operated by the trustees under the will of David Ward, and likewise certain parcels of land and town lots, dock properties, boomage and riparian rights at and near East Jordan, Charlevoix County; Alba, Antrim County; Manistee, Manistee County, or Bay City, Bay County, Mich.

All of the lands will be offered in parcels as fixed by the decree of the court, the same ranging in size from 320 acres and upwards for the timbered lands and 80 acres and upwards for the cut-over lands, and lands, the timber on which has been sold and conveyed.

For maps and further particulars write HURDIS M. READY, Circuit Court Commissioner, Bay City, Mich., or CHAMBERLAIN, MAY, DENBY & WEBSTER, 1406-19 Dime Savings Bank Building, Detroit, Mich.

### HOTEL DEMPSEY MACON, GA.

European Plan. 225 Modern Rooms.  
The Only Fireproof Hotel in Macon.

Windows screened Throughout.  
The Restaurant a Special Feature.  
RATES \$1.00 AND UPWARDS.  
With private Bath \$2.00 and upwards.

HOTEL DEMPSEY COMPANY  
J. M. HEMPSTED, Mgr.



## Hosiery Mill Location

Will be glad to confer with interested parties  
regarding excellent location for hosiery mill.  
Splendid building now ready for machinery.

Healthful location, ample supply of labor, citizens  
of community interested in seeing development  
made.

#### Seaboard Air Line Railway

J. A. PRIDE, General Industrial Agent

NORFOLK, VA.

### THE HAMMOND HOTELS THE HOTEL ESSEX

Opposite South Terminal Station  
BOSTON, MASS.

European Plan.  
Rates Moderate.  
Absolutely Fireproof.

Free Transfer Baggage from and to Station.  
Terminal of Trains from South and West.

DAVID REED, Manager

## Bargains in Machinery and Supplies.

### D. C. UNITS—125 VOLTS

50 K. W. Cr. Wh. to 11x12 Chuse.  
75 K. W. Westge. to Chuse Simple.  
100 K. W. Triumph to 13 and 18x14 Ideal.  
200 K. W. Cr. Wh. to 20x21 Buckeye.  
300 Westge. to Buckeye Simple Engs.  
350 K. W. Cr. Wh. to 24x33 Buckeye.  
2 400 K. W. Ft. Way. to Allis H. C. C. Cor.  
Also A. C. Units, Motors, Generators, etc.  
Write us for any Second-hand Machinery.  
**HAROLD R. WILSON MACHINERY CO.**  
419 Pine St. Other Sizes St. Louis, Mo.

### 25-TON REFRIGERATING MACHINE

#### For Sale

One 25-ton refrigerating machine, with condensers and complete equipment, in A No. 1 condition. Price \$1500 for quick sale. Reason for selling, putting in a larger machine.

W. H. LUDEN

READING, PA.

### BOILERS

(3) 550 H. P. Edge Moor, W. T., practically new.  
(2) 270 H. P. Babcock & Wilcox, 200 lbs. steam.  
(8) 150 H. P. 72"x18" H. R. T., 125 lbs. steam. Will be sold cheap—with or without Wetzel Stokers.  
Large stock of Engines, Boilers, Machine Tools and General Machinery. Write for detailed catalogue.  
HERMAN L. WINTERER, 908-910 Beach St., Phila., Pa.

### BOILERS

Two 250 H. P. Babcock & Wilcox Water-tube Boilers, insurance certificate 160 lbs. steam pressure, each \$1000.  
Two 220 H. P. Heine Water-tube Boilers, insurance certificate 150 lbs. steam pressure, each \$900.

**DUZETS & SON, 30 Church St., NEW YORK**  
Send for complete "Bargain List."

### Dredge Boat For Sale

One dredge boat built of cypress (Fairbanks Machinery) with two-yard dipper. For terms and particulars, apply to

**A. WILBERTS' SONS LUMBER & SHINGLE CO.**  
PLAQUEMINE, LA.

### Tampa Machinery Exchange

TAMPA, FLA.

Buy, Sell and Exchange Machinery of All Kinds

WRITE US YOUR WANTS

### Diesel Oil Engine

170 H. P. direct connected to a 120 K. W. 250 volt Western Electric Generator complete; seen running

Address **POWER EQUIPMENT CO.**  
500 Fifth Avenue, New York

## MACHINERY AT A BARGAIN

2 150 H. P. Casey-Hedges Return Tubular Boilers.  
3 Boiler Feed Pumps.  
1 Enclosed Heater, in fair condition.  
1 11x9½ Westinghouse Air Compressor.  
1 Westinghouse Junior Vertical Engine-Driving Exciter.  
1 DeLeval-Stanley Generating Outfit, consisting of a DeLeval Turbine geared to 2 Stanley 80 K. W. 240-volt 3-phase 60-cycle Alternators.  
1 Westinghouse-Parsons 300 K. W. 60-cycle 3-phase 480-volt units in good condition, complete with Westinghouse-Leblanc condenser and motor-driven auxiliaries.  
Also Five Miles Copper Wire, Meters, etc.  
For further particulars write

**M. B. WELLBORN, Anniston, Alabama**

In replacing our manufacturing equipment we find the following first-class

## Used Machine Tools

which we offer at attractive prices

16"x 6' Reed.  
17"x 8' Gray.  
20"x 8' Lodge & Shipley, Q. C. G.  
20"x10' Lodge & Shipley, Q. C. G.  
20"x12' Lodge & Shipley, Q. C. G.  
24"x 8' Lodge & Shipley, Q. C. G.

### SPECIAL LATHES

No. 3 Lodge & Shipley Rapid Reduction Lathe.  
24"x7' Lodge & Shipley Chucking Lathe.  
14"x6' Towsley Speed Lathe.  
2 18"x8' Lodge & Shipley Single Pulley Driven Lathes.

### METAL SAWS

Globe Power Hack Saw, 8" capacity

### MISCELLANEOUS MACHINE

One Marion Double Grinder.  
One Marion Double Grinder on stand.  
One Diamond Disk Grinder on column.  
One Sturtevant Blower, diameter of outlet 24".  
One "Ohio Planer," 24"x24"x12", with two heads on cross rail.  
Universal Swivel Table for Radial Drill.  
Brown & Sharp Grindstone Frame for 5"x 36" stone.  
One Mueller Grindstone Frame for 4"x27" stone.  
One 12"x40" Mumford Molding Machine.  
Write for complete description with prices of machines in which you are interested.

**The Lodge & Shipley Machine Tool Co.**  
CINCINNATI, OHIO

## FOR SALE

## Water Tube Boilers

2—250 H. P. each Heine Water Tube Boilers, designed for 180 lbs. pressure; used three years only; complete excepting stacks.

1—500 H. P. Stillwell-Bierce Open Type Feed Water Heater.

2—6x4x6 Worthington Duplex Steam Pumps.

1 lot Extra Heavy Pipe, Valves and Fittings.

This plant is still on the foundation at East Chicago, Indiana. We will quote an exceptionally attractive price on the complete outfit for immediate delivery before we bring same to our warehouse.

### Pfannmueller Engineering Company

Suite 1733 First National Bank Bldg.

CHICAGO

### WAYNE REBUILT MACHINES

Furnished under plan carrying full protection to purchaser.  
BAND-SAW MILLS—6' Fay-Egan, 7' Wayne, 8' Sinker-Davis.  
CIRCULAR MILLS—Gaar-Scott, Knight, Russell, Sinker-Davis.  
PLANERS—29 Single Planers, 10 Double Planers, 7 Single Planers and Matchers, 8 Double Planers and Matchers.  
MOULDERS—40 machines from 4" up to 12" and of every type.  
RESAWS—48", 54" and 66" Band; 24", 32", 36" and 42" Circular.  
BOX MACHINERY—Printers, Lock Corner Machines, Nailers, etc.  
COOPERAGE—Hoop, Stave and Heading Machinery for every need.  
Seven hundred machines in stock.  
Our "Wayne List" covering complete stock, mailed to anyone interested.  
We save you money.  
We give you a square deal.

**WAYNE MACHINERY CO.** FORT WAYNE, IND.  
Successors to Hanna-Brackebridge Co.

## Special Bargains in Sanders

1 42" 3-drum Perfection Sander, thoroughly overhauled.....\$350.00  
1 48" 3-drum Thomas Sander.....\$400.00  
1 48" 3-drum H. B. Smith Sander.....\$500.00  
1 48" 3-drum Royal Invincible Sander, used only 3 weeks.....\$550.00  
1 54" 3-drum J. A. Fay & Co., fine order.....\$500.00  
1 60" 3-drum Columbia Sander in A-1 condition.....\$600.00

### JOINTERS

1 20" Carrey Hand Jointer.....\$100.00  
1 30" Bus Extra Heavy Hand Jointer.....\$125.00  
Woodworking machinery of all kinds. Write, stating your requirements.

**CLEVELAND BELTING & MACH'RY CO.**  
1922 Scranton Rd. Cleveland, O.

## BOILERS

5 175 H. P. 72x20. 150 lbs. pressure.  
225 H. P. Stirling. 150 lbs. pressure.  
2 250 H. P. Heine, \$675 ea. 150 lbs. pressure.  
1 345 H. P. Heine, Marine. 150 lbs. pressure.  
1 350 H. P. Heine, \$1200. 150 lbs. pressure.

Also, Engines, Dynamos, Motors, Etc.  
Write us for Second-hand Machinery.  
**HAROLD R. WILSON MACHINERY CO.**  
419 Pine St. Other Sizes St. Louis, Mo.

## 1-75 H. P. DIESEL OIL ENGINE

3 cylinder vertical, belted type, with full equipment; seen in operation; bargain. Address

**1555 MANUFACTURERS RECORD**  
BALTIMORE, MD.

### ENGINE FOR SALE

One Horizontal McIntosh & Seymour Tandem Compound Condensing Engine, 11"x20"x30", 240 L. H. P. at ½ cut off; 300 L. H. P. at ¼ cut off; 125 lbs. steam pressure; 23" vacuum; flywheel 32" face by 11 ft. diameter; weight 13,000 lbs. This engine is in first-class operating condition and could be shipped immediately.

The American Railways Co. Witherspoon Bldg., Phila.

## 2000 Adams-Bagnall and Gen. Electric Arc Lamps, A. C. and D. C.

### FOR SALE

A bargain to quick buyer.

**JOHN LEONARD & CO., Inc.**  
149 Broadway, New York

## FOR SALE

1 100 K. W. G. E. 250-volt D. C. Generator, D. C. to high-grade auto. engine.  
100 K. W. Jeffrey 250-volt, belted to McEwer 16x16 engine.  
100 K. W. Morgan-Gardner 250-volt, belted to 16x16 Skinner enclosed engine.  
Both good for 125 K. W.

In stock—Immediate shipment.—Guaranteed first-class electrically and mechanically.

**THE ASSETS PURCHASING CO.**  
WHEELING, W. VA.

## FOR SALE PIPE NEW & SECOND HAND

Furnished with Threads and Couplings. Suitable for All Practical Purposes

All Sizes In Stock Ready for Shipment

Send us your inquiries and get our prices. It will interest you.

**Eagle Pipe Supply Company, Inc.**  
29 Howard Street N. Y. C.

## MACHINERY BARGAINS

A few selections from our big stock of snaps. Write for Free Complete List No. XB 213.

1000 tons "T" Rails, 12 to 16 lbs.  
No. XB-31. Worm Gear Freight Elevator, 2000 lbs. cap.  
No. XB-32. Hoisting Engine, Dbl. Cyl. Drum, reversible link motion, 10 in. x 14 in.  
No. XB-33. 200 Storage Tanks, capacities from 25 to 2000 gals.  
No. XB-34. Sprague Electric 3-phase 20 H. P. Motor.  
No. XB-35. 300 pieces 15-in. 42-lb. "I" Beams.  
No. XB-36. Austin Jaw Crusher, 14-in. x 10-in. Opening.

**HARRIS BROTHERS COMPANY, Owners**  
Chicago House Wrecking Company  
35th and Iron Streets CHICAGO, ILL.

## Westinghouse Type "C" Motors

3-Phase, 60-Cycle, 200-400 volt, 1120 R. P. M.  
2—5 H. P.; 2—7½ H. P.; 2—10 H. P.; 1—15 H. P.; 1—20 H. P. Condition guaranteed.

Special Prices on Direct Current Motors  
**MILLER-OWEN ELECTRIC CO., Inc.**  
217-219 First Ave. Pittsburgh, Pa.

## Dynamos and Motors

Switchboards, Fans, Instruments, Etc.

Large stock new and used, both alternating and direct, ready for immediate shipment. Repairing done. Entire plants or parts wanted.

### FOR SALE

Brand new 75 H. P. G. E. 3-phase 60-cycle 850 R. P. M. 220 volts slip ring, with base pulley and speed regulator. \$500. Motor is in original crate from G. E. Company. Never used.

**R. SCHEINERT CO.**  
125 North Third St. PHILADELPHIA

## Electrical Machinery

For quick removal we are offering a 150 K. W. 250 V. Western Electric Generator direct connected to a Watertown engine. Unit in excellent condition. Price \$1750.

We also carry a large stock of all kinds of electrical machinery. Let us have your requirements.

**GEORGE SACHSENMAIER & CO.,**  
145 N. Third St., PHILADELPHIA

## Alternating Current Unit FOR SALE

1 250 K. V. A. 3-phase 60-cycle 220 or 440-volt 200 R. P. M. type ATB revolving field type General Electric Alternator, direct connected to a 17½x21 heavy-duty type piston-valve Buckeye automatic steam engine, fully equipped with exciter, panel board and instruments, condition guaranteed. Bargain price for immediate order.

## National Machinery & Wrecking Co.

Electrical Department

1916 Scranton Road, Cleveland, Ohio

### D. C. UNITS FOR SALE

One 40 K. W. and one 60 K. W. 250-volt D. C. direct-connected engine generator sets, complete with all accessories and guaranteed in excellent condition at bargain prices. Large stock motors and small generators. We buy and sell only modern high-grade electrical apparatus, which we thoroughly overhaul and guarantee fully.

**V. M. NUSSBAUM & CO.** Fort Wayne, Ind.

## FOR SALE AT BARGAIN—COTTON SEED OIL MILL AND REFINERY EQUIPMENT

Equipment for 100-ton Cotton Oil Mill.

Equipment for 200-barrel Cotton Oil Refinery

All machinery and equipment in excellent condition and will be sold at attractive figures as complete 100-ton Cotton Oil Mill outfit and complete equipment for Cotton Oil Refinery capable of refining 200 barrels of cotton oil per day. Inspection at mill is invited. Full information and prices will be furnished by

**VIRGINIA FIBRE CORPORATION,**

**Equitable Building,**

**WILMINGTON, DELAWARE**



# PIPE

Second-hand, all sizes, 1/2" and larger, with new threads and couplings, guaranteed for service.

- 1 1/2-yd. Ransome concrete mixer with gasoline motor and loader on wheels.
- 3 1/2-yd. and 2 1/2-yd. Ransome mixers with engines on skids.
- 2 No. 2 1/2 Smith concrete mixers with engines on wheels.
- 1 5-lever Stroudsburg 7x10 cableway engine.
- 12 Lidgerwood, Lambert and other hoisting engines.
- 24" and 20" industrial rail and turntables.
- 1 5 H. P. Meitz & Weiss gasoline engine.
- 1 4-leaf 1-yd. orange-peel bucket.

## PIPE & CONTRACTORS' SUPPLY CO.

3 DOVER STREET, N. Y. C.  
New Branch, 343-353 East 123d Street

## PIPE

FOR ALL PURPOSES

Slightly used Pipe from 1" to 12" with new threads and couplings. Thoroughly overhauled and tested before shipping.

We can save you money.  
Jos. Greenspan's Sons Iron & Steel Co.  
St. Louis, Mo.

## FOR SALE

# PIPE

## Second-Hand

All sizes, 1/2" to 24"

Furnished with new threads and couplings, suitable for every practical purpose.

Also large assortment of Contractors' Equipment, Hoisting Engines, Boilers, Concrete Mixers, etc.; all thoroughly overhauled.

**Marine Metal & Supply Co.**  
167 South St. NEW YORK

## BOILERS FOR SALE

Four new 100-horse Fire Box Return Tubular Boilers, guaranteed by Bond and Hartford Insurance Papers.

Address TUBULAR

Care Manufacturers Record, Baltimore, Md

## Used Machinery

FOR SALE

The following used machinery is offered for sale, in good operating condition, located at Goldsboro, N. C.: 2 80 H. P. return tubular boilers, 1 60 H. P. return tubular boiler, 1 80 H. P. center crank engine, 1 40 H. P. center crank engine, 1 Glen Cove planer and matcher 6x10 in., 1 Glen Cove planer and matcher 6x14 in., 1 complete drykiln with 10 M. feet pipe. Low prices for prompt removal.

Address Box 167, Burgaw, N. C.

## CONCRETE MIXERS

1 1/2-yd. Koehring Mixer, boiler and engine on trucks, side loader and water tank. Has new drum and trucker wheels.  
1 No. 10 Chicago Mixer, gasoline engine on trucks, side loader and tank; 1 year old.  
3 1/2-yd. Smith Mixers, boiler and engine on trucks. Two with side loader and tanks. Overhauled, ready for immediate shipment.

GEORGE B. CURD

\* Merchants Bldg Cincinnati, Ohio

## FOR SALE CHEAP

One Land Pile Driver, 3000-lb. hammer, 50 ways and steel rollers.  
One Steel Stack, S. S., 6'x100'.  
One Steel Stack, S. S., 10'x150'.

CENTRAL TRANSFER CO.

415 N. Front St. BALTIMORE, MD.

## We Buy and Dismantle FACTORIES

## MILLS

## MACHINE SHOPS

and all kinds of

## INDUSTRIAL PLANTS

We are always in the market to buy

## Scrap Iron and Steel

OF EVERY KIND

## FRANK SAMUEL

Harrison Building

15th and Market Sts. Philadelphia, Pa.

## SECOND HAND MACHINE TOOLS

OF EVERY CONCEIVABLE TYPE

Send for Stock List

## PRENTISS TOOL AND SUPPLY CO.

New York

## THERE IS A REASON

why our properly rebuilt machinery gives satisfaction

ASK US

ENGINES, CORLISS: 26x48 Filer & Stowell, heavy duty; 24x48 Hamilton; 18x42 Lane & Bodley; 16x42 Allis; 14x42 Hamilton; 14x36 Nagle; 12x30 Hamilton; 10x30 Hamilton; 10x24 Hamilton.

ENGINES, AUTOMATIC: 2 21x22 Ridgway; 19x18 Ball; 14x14 Ideal; 10x16x12 Buffalo Compound; 12x14 Green; 12x12x12 Armstrong & Sims; 10x18 Buckeye; 9x10 New Victor; 8x14 Noyes; 8x10 McEwen; 5x6 Harrisburg.

ENGINES, THROTTING: 20x24 H. S. & G.; 16x18 Skinner; 16x18 Ames; 14x14 Lewis, vertical; 12x13 New Enterprise; 12x14 Gibbs; 11x16 H. S. & G.; 10x12 Ajax; 10x15 Nagle; 8x16 Brownell; 8x10 New Erie; 8x10 Brownell; 7x10 Atlas; 6x6 Beggs; 3x4 Kriebel.

BOILERS, STATIONARY: HIGH PRESSURE: 1 200 H. P. for 125 lbs.; 2 150 H. P. for 150 lbs.; 3 150 H. P. for 125 lbs.; 2 100 H. P. for 125 lbs.; 2 80 H. P. for 125 lbs. Standard from 150 H. P. to 20 H. P. for 100 lbs.

BOILERS, FIRE BOX: 150 to 10 H. P. high and low pressure.

BOILERS, VERTICAL: 100 to 4 H. P. plain and submerged tubular.

GENERATORS AND MOTORS: All sizes and kinds, belted and direct connected.

MISCELLANEOUS: Heaters, open and closed; pumps, all sizes; sawmills; corn mills and feed grinders; exhaust fans and blowers; woodworking machinery; iron-working tools; leather, rubber and canvas stitched belt; pipe, valves and engine and boiler fittings.

Sole manufacturers of the Leader Injector and Ejector. Ask for circular.

THE RANDLE MACHINERY CO.

1734 Powers St., Cincinnati, O.

## WANTED TO BUY

## PIPE AND CASING

8, 10 and 12 inch, also other sizes. Will pay spot cash for good usable material.

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## FOR SALE—New Lathes at Bargain Prices

Geared head 20"x10", 18"x10", 18"x8", 16"x8", 16"x6". Cone head 20"x10", 15"x8", 15"x6". All the above with semi-quick-change gears. Second-hand lathes with geared heads, quick-change gears, 16"x8", 16"x6", 15"x6". Second-hand lathes, cone head, plain gears, 20"x18", 27x16", 20"x10", 18"x8", 13"x6", 13x5".

CHAS. T. LEHMAN Birmingham, Ala.

## CONTRACTORS' EQUIPMENT

For Sale

1-70-ton Bucyrus Steam Shovel.  
1-25 H. P. Geyser Traction Engine.  
25-yard Ryan & McDonald Dump Cars.

EASTERN RAILWAY SUPPLY CO.

413-414 American Bldg. Baltimore, Md.

## Woodworking Machinery

## SANDERS

- 1 42" Triple-drum "Fay & Egan."
- 1 36" Triple-drum "Berlin-Invincible."
- 1 30" Triple-drum "Smith."
- 1 30" Single-drum "Berlin."
- 1 No. 2 Universal "Clements."
- 1 Single-drum "Clement-American."
- 1 No. 2 Disc "Clement-American."
- 1 12" Sanding Drum.
- 2 18" Disc "Crescent."
- 1 Arm Sander "Rowley & Hermance."
- 1 No. 2 Belt Rubbing and Sanding "Moore."

Also carry in stock a large variety of other woodworking machinery, electric and steam power equipment, metal-working machinery and contractors' outfits. We offer our machinery in good serviceable condition—some practically like new. Send for list.

L. F. SEYFERT'S SONS, Inc.

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For Sale

- 2 stands 9x30", Noye Corrugated.
- 1 stand 9x30", Noye Corrugated.
- 1 stand 9x30", Allis Corrugated.
- 1 stand 9x30", Allis Corrugated.
- 2 stands 9x30", Allis Corrugated.
- 2 stands 9x24", Allis Corrugated.
- 2 stands 9x30", Nordyke Smooth.
- 1 stand 9x30", Dawson Smooth.
- 1 stand 9x24", Noye Smooth.
- 14 stands 9x24", Allis Smooth.

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## FOR SALE

1 American Holst & Derrick Co. Ditcher and Steam Shovel equipped with 9-16-yd. dipper. Installed new Sept. 1, 1912. In use 10 months. Additional information upon request. Location, Jacksons Lake, Ala., L. & N. Railroad.

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Now in use, of modern type, first-class order and condition, with full and complete equipment, consisting of Lathes, Planers, Drills, Horizontal and Vertical Boring Mills and Milling Machines.

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## Bargains in Second-Hand Machinery

MUST BE MOVED AT ONCE

## BOILERS

- 1 75 H. P. Pennsylvania Horizontal Tubular, 50 tubes.
- 1 60 H. P. Horizontal Tubular.
- 3 15 H. P. Lidgerwood Uprights.
- 1 20 H. P. Surrey Parker.
- 1 6 H. P. Erie City Upright.

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- 1 Sinker Davis Sawmill Rig.
- 1 Surrey Parker Log Loader.
- 1 Surrey Parker Log Loader Steam Plant.
- 1 Wheeland Gang Edger.
- 1 Set Live Lumber Rolls.
- 1 B. T. B. Knife Grinder.
- Saws from 19 to 55'.

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- 1 10"x15" Haberkorn.
- 1 12"x14" Wheeland.
- 2 10"x12" Class C Wheelands.
- 2 9"x11" Class C Wheelands.
- 1 13"x16" Twin Throttling Wheeland Engine.
- 1 9"x9" Vertical.
- 1 9"x10" Shepherd.
- 1 12"x12" Sinker Davis.
- 1 12"x20" Erie City.

## MISCELLANEOUS

- 1 Forbes 3" Pipe Machine.
- 1 Dean Steam Pump.
- 1 James A. Fay Matcher.
- Lot unused 16"x24" Crane Fittings.

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CANTON, N. C.

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Penna. Iron Works, Corliss Driven; 30-ton Refrigerating, 15-ton Ice; in perfect condition; cheap for quick removal.

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- 3 250 H. P. Franklin Horizontal Water-Tube, 150 lbs. steam.
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- 1 175 H. P. 72"x20" Horizontal Return Tubular, 120 lbs. steam.
- 1 150 H. P. 72"x18" Horizontal Return Tubular, 125 lbs. steam.
- 1 150 H. P. Babcock & Wilcox Water-Tube, 150 lbs. steam.
- 1 125 H. P. 66"x18" Horizontal Return Tubular, 125 lbs. steam.
- 1 80 H. P. Vertical, 100 lbs. steam.
- 1 70 H. P. 54"x16" Horizontal Return Tubular, 125 lbs. steam.
- 1 70 H. P. 54"x16" Horizontal Return Tubular, 100 lbs. steam.
- 2 50 H. P. Locomotive, portable, 100 lbs. steam.

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- 28"x48" Hamilton.
- 26"x60" International.
- 20"x42" Hewes & Phillips.
- 18"x42" Watts-Campbell.
- 16"x36" Allis.
- 16"x32" Richards.
- 14"x42" Hamilton.
- 2 14"x36" Scottsdale.
- 12"x24" Hewes & Phillips.
- 10"x24" Watts-Campbell.

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- 1 18"x20 1/4"-13 1/4"x24" Ingersoll-Sargeant Class A Straight Line, two stage. Capacity 940 cu. ft.
- 1 22"x22 1/2"x24" Ingersoll-Sargeant Class A Straight Line, Capacity 973 cu. ft.
- 1 12"x14 1/2"x14" Ingersoll-Sargeant Class A Straight Line, Capacity 385 cu. ft.
- 1 12"x12"x16" Ingersoll-Sargeant Class C Straight Line, Capacity 275 cu. ft.
- 1 10"x10"x10" Ingersoll-Sargeant Duplex, Capacity 275 cu. ft.

## DIRECT CONNECTED UNITS

- 1 200 K. W. 220-volt D. C. Westinghouse, 3-phase 25-cycle Generator, direct connected to Buckeye Engine.
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- 36"x12" New York Safety.
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- 30"x18" Bement-Miles.
- 30"x22" Bement-Miles.
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- 27"x21" Pratt & Whitney.
- 26"x17" Johnson.
- 26"x12" Fifeild.
- 22"x9" Lodge & Davis.
- 24"x10" Putnam.
- 19"x8" LeBlonde, turret attachment.
- 18"x10" Schumacher & Boye, taper attachment.
- 18"x6" Hendey Lathe, taper attachment.
- 33" Extension Bed Gap Lathe.
- 18"x8" Reed.
- 16"x7" Putnam.

## PLANERS

- 11"x8" 10"x18" Retts.
- 60"x60"x14" Sellers, 4 heads.
- 60"x60"x14" Pond, 2 heads.
- 48"x48"x16" Detrick & Harvey Open-Side Planer, cross rail lengthened to plane 60" wide, 3 heads, supplementary rolling table.
- 42"x42"x15" Niles, 3 heads.
- 36"x36"x12" New Haven, 1 head.
- 36"x33"x12" New Haven.
- 33"x33"x12" Woodward & Powell.
- 28"x28"x7" New Haven, light pattern.
- 28"x28"x7" Heavy pattern, has radius attachment.
- Several small planers.
- 42"x42"x12" New Haven.

## SHAPERS

- 24" American, back geared.
- 24" Back-Geared Gould & Eberhardt.
- 20" Gould & Eberhardt.
- Several small Shapers as well as traveling head, besides all sizes of new machines in stock.

## MISCELLANEOUS

- 72" Bickford Vertical Boring Mill, 2 heads.
- 60" Sellers Boring Mill, 2 heads.
- 48" Sellers Boring Mill, 2 heads.
- 36"x12" Heavy-Duty Slab Milling Machine.
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- 8" Stroke Bement Slotter.
- No. 5-B Becker-Brainard Vertical Milling Machine, complete with motor.
- 100-lb. Dienelt & Eisenhardt Belt Hammer.
- 75-lb. Beaudry Champion Belt Hammer.
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- 48" Bement Horizontal Boring Mill.
- 2 No. 406-A Adriance Geared Presses.
- 2 No. 22 Adriance Riveting Presses.
- No. 3 Cincinnati Universal Milling Machine.
- No. 3 Adriance Inclined Press.
- No. 3 Kempnuth Milling Machine.
- 4 No. 6 Whitney Hand Milling Machines.
- No. 2 Warner & Swasey Wire Feed Screw Machines.
- 3-spindle Barr Sensitive Drill Press.
- 5 No. 103 Bliss Card Cutting Presses.
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- 350-lb. Bement, Miles & Co. Single Frame Steam Hammer.

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20-ton used Climax engine in excellent condition. Specifications on request.

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Largest Stock Locomotives in United States

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12, 16, 20, 25, 30, 35 and 40-lb. Sections.  
Also Splices, Bolts, Nuts and Spikes.  
Our Rails are first quality. A. S. C. E. Section, carefully inspected.

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Six ton tandem paving roller in good condition. Write

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LARGE TONNAGES—Carload and less carload lots, advantageously located for Southern delivery.

Splice Bars for any section rail in stock. Frogs, Switches, Bolts, Nuts, Spikes, and all Track Accessories.

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COMPRESSORS  
1 22x22 13 1/4x24 Sullivan, steam driven, class WB 2, straight line, 2 stage, capacity 1160 cu. ft.

1 24x24x30 McKiernan, class A, straight line, capacity 1414 cu. ft.

1 24x24x30 Ingersoll, class A, steam driven, straight line, capacity 1223 cu. ft.

2 16x20x16 Ingersoll-Sargant, class H-1, duplex, steam driven, capacity 1540 cu. ft.

2 65-ton Bucyrus steam shovels, 2 1/2-yd. dipper (bargain).

2 Lidgerwood hoisting engines, 14"x18", D. C. three tandem drums, reversible and link motion, suitable for dredge, cableway or incline work.

A complete stock of hoisting engines, concrete mixers, derricks, pumps, boilers, etc.; in fact, everything for the contractor.

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#### 10-WHEEL TYPE

Six—Built by Baldwin Locomotive Works in 1906, excellent condition, modern in every respect; cylinders 20x26", driving-wheel centers 60", weight about 80 tons; suitable for either freight or passenger service. Ready for immediate delivery.

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#### A. S. C. E. Sections LIGHT STEEL RAILS PROMPT DELIVERY.

8, 12, 16, 20, 25, 30, 35, 40 pounds per yard. With Splices and Spikes.

UNITED STATES RAIL CO.  
Manufacturers, Cumberland, Md.

Certificates of Inspection by Hildreth & Co., Inspecting Engineers of New York City, assuring absolutely first quality, furnished free of cost.

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#### Four wheel type

40 tons; 17"x24"; 160 lbs. pressure

Overhauled  
Modern

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Released by Pennsylvania R. R.

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### Relaying Steel Rails

35-lb., 40-lb., 56-lb., 60-lb., 70-lb., 80-lb., 85-lb. and Angle Bars to lay same

Advantageously located for Southern delivery; also other weights of RELAYING RAILS, in different sections of the country; and NEW STEEL RAILS, all weights. We handle first-class Relaying Rails, and do not select them from scrap. Let us know your requirements. We buy Rails fit to relay, and pay spot cash.

ROBINSON & ORR Pittsburgh, Pa.  
Low Prices on New FROGS and SWITCHES.

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78 tons, 48 lbs. per yard, with plates  
200 tons, 56 lbs. per yard, with plates  
800 tons, 60 lbs. per yard, with plates  
400 tons, 67 lbs. per yard, with plates

#### NEW STEEL RAILS ALL WEIGHTS

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2 10-ton Road Rollers.  
2 Steel Tank Sprinkler Wagons.  
1 25 H. P. Traction Engine.  
3 No. 4 Champion Crushers on wheels with Revolving Screen and Elevator.  
6 Wheel Scrapers, Steam Drill Pump, etc.  
2 1/2-yard Smith Mixers with Steam Boiler and Engine mounted on same frame.  
SOUTHERN MACH'Y AND EQUIPMENT CO.  
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#### LOCOMOTIVES

AND

#### STEAM SHOVELS

Four standard-gauge Climax locomotives, weighing 30 to 45 tons; excellent condition; thoroughly overhauled; immediate shipment.

Also forty other standard and narrow gauge locomotives at our shops, Birmingham.

#### STEAM SHOVELS

We have ten steam shovels, of different sizes and makes, thoroughly overhauled. Write us for prices and terms.

BIRMINGHAM RAIL & LOCOMOTIVE CO.  
Birmingham, Ala.

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New York City

### Plant and Equipment FOR SALE

Including Locomotives, Gondolas, Derricks, Hoisting Engines, Boilers, Concrete Mixers, Rock Drills, Buckets, Pumps, Engines, Elevators, Conveyors, and Camp Equipment.

#### ALABAMA POWER COMPANY

Engineering Department,  
Birmingham, Alabama.

### CONTRACTORS' EQUIPMENT

1 22 H. P. Buffalo Pitts Traction Engine.  
4 7-yd. Buffalo Pitts Traction Cars, 10" tread.  
4 2 1/2-yd. Steubener Excelsior Bottom-Dump Buckets.

#### CABLEWAYS

1 Lidgerwood, 1700' span, 10x12 engine, complete; no towers.  
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1 Lidgerwood, 750' span, 9x12 engine, complete; no towers.  
1 10-ton Browning Crane, 35' boom, fine condition.

#### BOILERS

2 40 H. P. on wheels, 100 lbs. steam.  
3 65x16 H. T. Boilers, built strapped, 130 lbs. steam.

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2 1900' Belt Drive Rand D 2 Type, 17x27x30.  
1 845' Belt Drive Rand D 2 Type, 22x14x16.  
1 Ingersoll Rand, Class A, steam driven, 20x22x24.

Send for our complete list.

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Several Locomotives and Cars.

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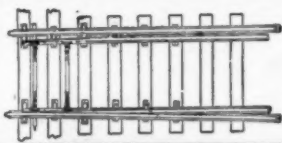
# OLIVER DUMP & SPREADER CARS

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Only AIR DUMP CAR under absolute control of operator. Can be brought back to upright position, after passing center of gravity, before entire contents of car have been unloaded. This admits of equal distribution of material on both sides of track. Write.

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Portable and Industrial Track

THE CINCINNATI FROG & SWITCH COMPANY

Switch Stands

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Rail Braces (4)



## CONTRACTORS' EQUIPMENT

Thoroughly Overhauled

Immediate Shipment

- 1—45-ton Vulcan shovel, style "F."
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- 1—Davenport locomotive, 9x14 cylinder, 36" gauge.
- Rails and fastenings, all weights.

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We lease or rent, with privilege of purchase.

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1000 TONS 75 LBS. PER YARD.

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1 25 H. P. Rebuilt Fire Box Boiler, price \$300.  
1 each 40, 60 and 80 H. P. Rebuilt Fire Box Boilers, with fittings, at a bargain.  
1 each 60, 80 and 100 H. P. Horizontal Tubular Boilers.  
1 each 6, 8 and 10 H. P. Vertical Boilers, complete.  
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1 10' dia. Mine Ventilating Fan, with engine.  
1 10-ton "Baldwin" Saddle Tank Locomotive, 44" gauge.  
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1 each 6, 8 and 10' Electric Mine Ventilating Fans (Thayer Pat.).  
The above must be sold without reference to cost. Write us.  
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Ten-ton Buffalo-Pitts Roller; Water Wagon and Scarifier. Outfit as good as new. Service guaranteed. Address

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- steel frame—7 sizes.
- manganese steel jaws.
- replaceable bronze bearings.
- adjustable to crush to any size from 1/2" to 3".
- portable outfits with folding elevators, stationary crushing plants, motor crusher outfits with engine and crusher on same trucks.

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## SECOND-HAND AND NEW MACHINERY

1 17x22" Locomotive; 1 14x20" Locomotive;  
1 Ingersoll-Rand Compressor, Imperial type, 570 cubic ft. air; 1 Ingersoll-Rand Compressor, Imperial type, 200 cubic ft. air; 1 Rand Drill Compressor, 75 cubic ft. of air; 1 3/4 Fay & Scott Engine Lathe, as good as new; 1 Georgia Iron Works Trimmer; 1 10x12 Ajax Engine; 1 7x10 Skinner Engine; 1 8x10 Ajax Engine and Boiler on wheels; 1 100-horse-power Tubular Boiler; 1 20-horse-power Locomotive Boiler; 1 15-horse-power Tubular Boiler; 1 20x20" Slab Conveyor; 1 6" Pipe Bent for Slab Conveyor; 1 Kentucky Power Cane Mill; 1 Boiler for Turpentine Pump, new; 1 Williams Vulcanizer for Tubes and Castings; 1 Fairbanks-Morse 2-horse-power Engine and Pump, new; 1 Thompson No. 2 Log Jack, new; 1 Thompson No. 1 Log Jack, new; 1 Thompson No. 2 Slab Conveyor, new; 1 Thompson No. 1 Slab Conveyor, new; 1 Thompson Wood Splitter, new; 1 Thompson No. 1 Power Cane Mill, new; 1 Pipe Machine, second-hand; 1 1/2" Filler & Stowell Twin Engine; large stock of Pulleys and Hangers.  
If you do not see what you want, write us, as our stock is changing daily.  
Thomasville Iron Works Thomasville, Ga.

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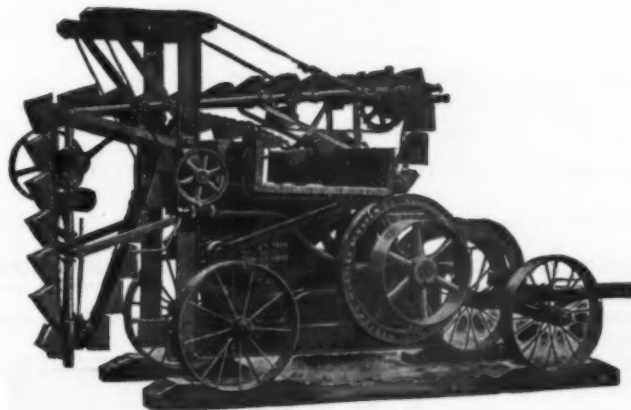
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RAILS, CARS, AND LOCOMOTIVES  
FROGS, SWITCHES, Etc

## EQUIPMENT BARGAINS

1 Contractor's outfit; Wagons, Slip Scrapers, Dump Cars, 36" gauge.  
1 Little Giant Steam Shovel.  
1 Huber Traction Engine.  
1 Hoisting Engine.  
1 Centrifugal Pump.  
Boilers, Stack, etc.  
1 Porter build Locomotive, Saddle-Tank, 7x12, 36" gauge, new.  
1 standard gauge 17x24 Baldwin.  
1 36" gauge 9x14 Saddle-Tank Vulcan.  
1 36" gauge 9x14 Saddle-Tank Porter.  
1 10x16 36" gauge Richmond Loco. Works  
6-wheel Saddle-Tank.  
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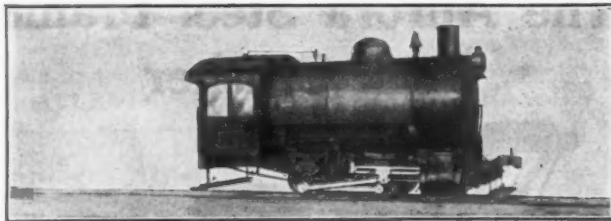
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#### STEAM STORAGE LOCOMOTIVES

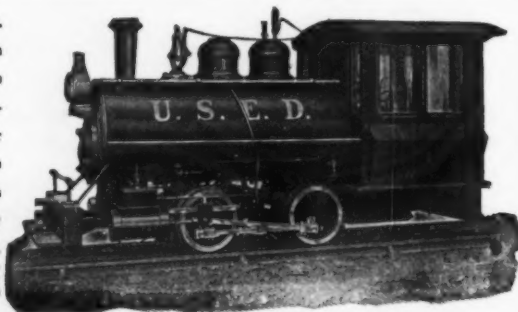
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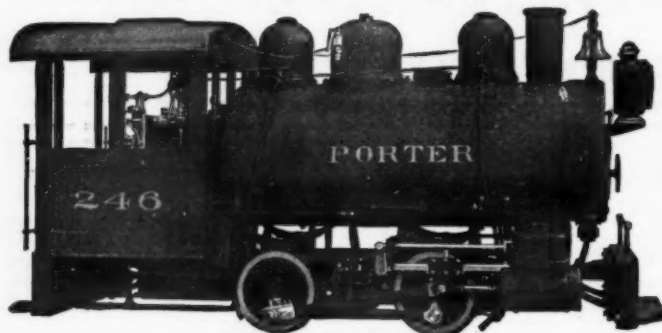
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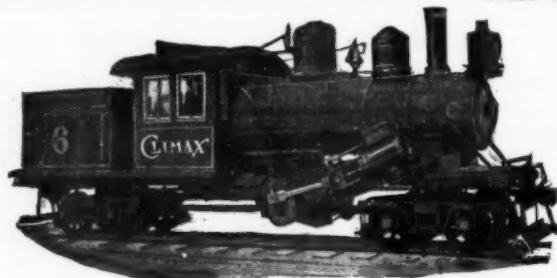


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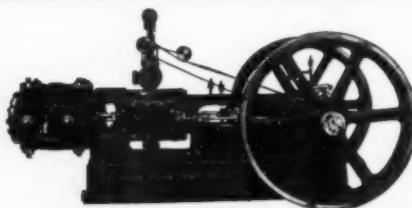
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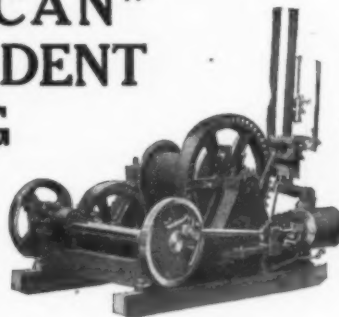
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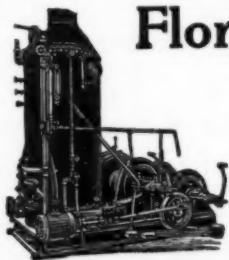
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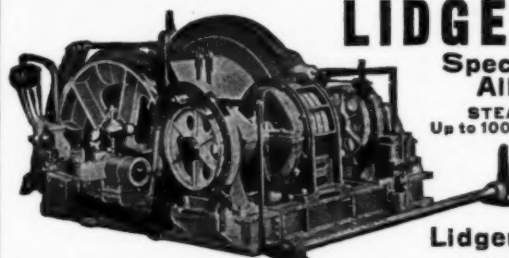
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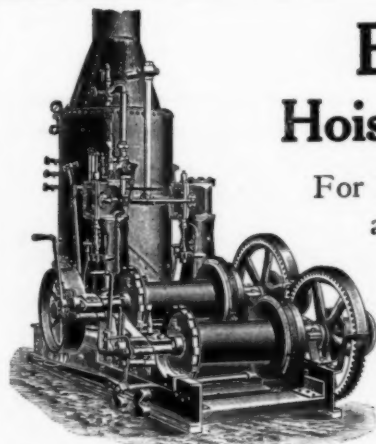
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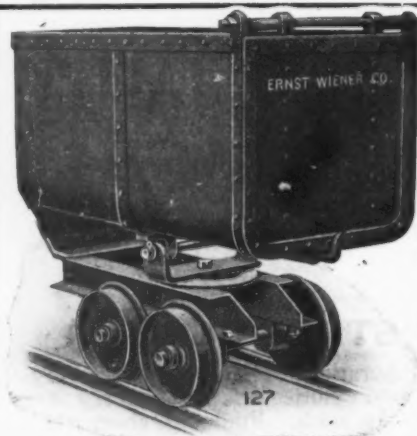
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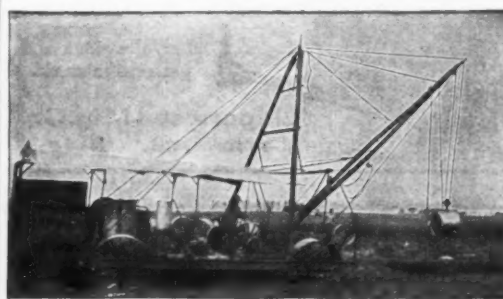
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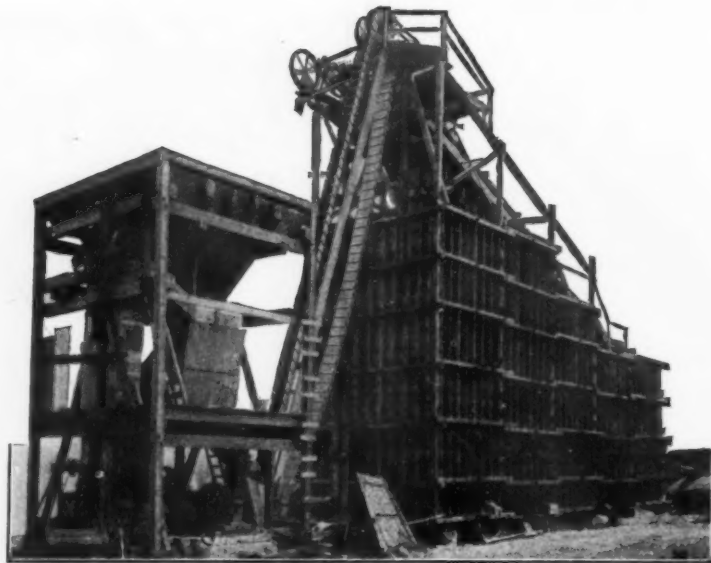
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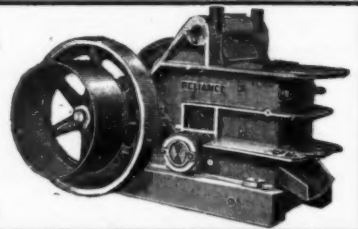
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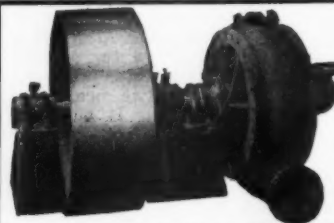
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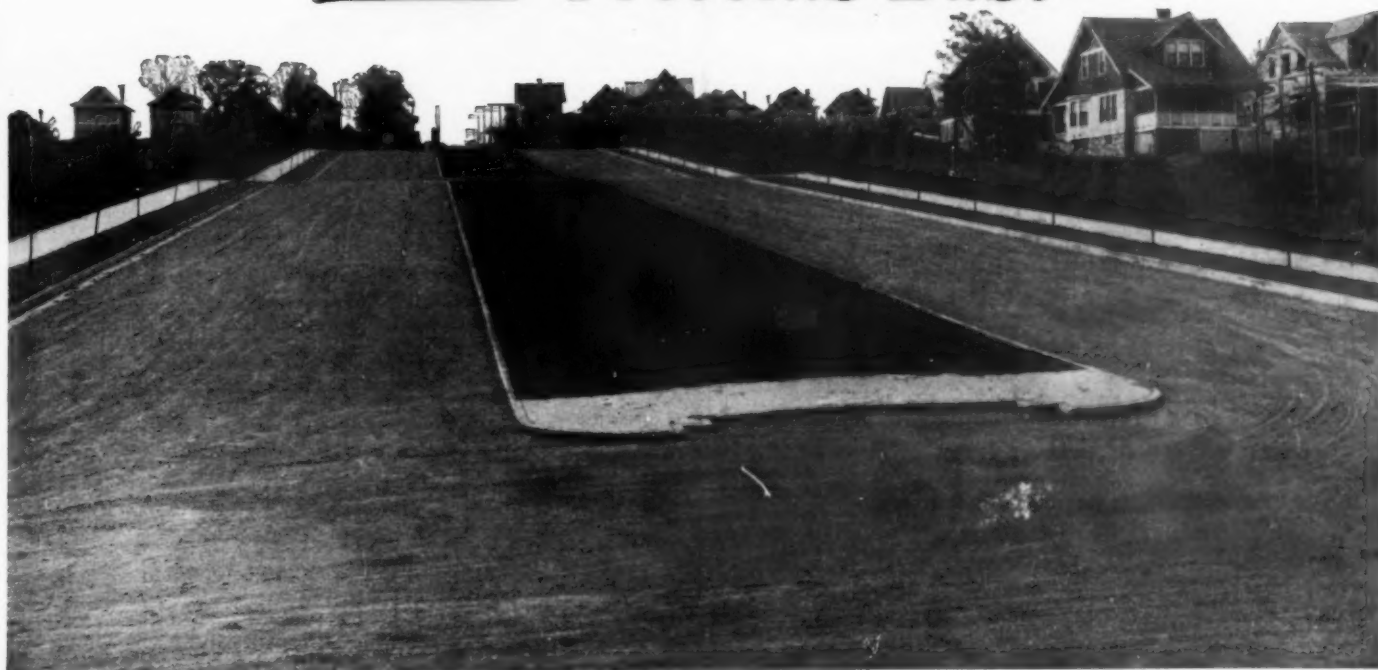
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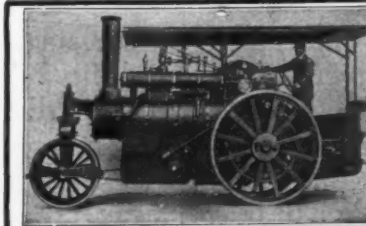
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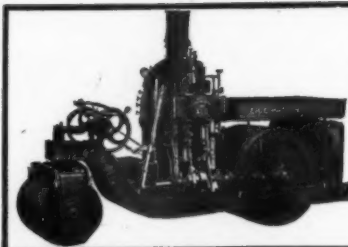
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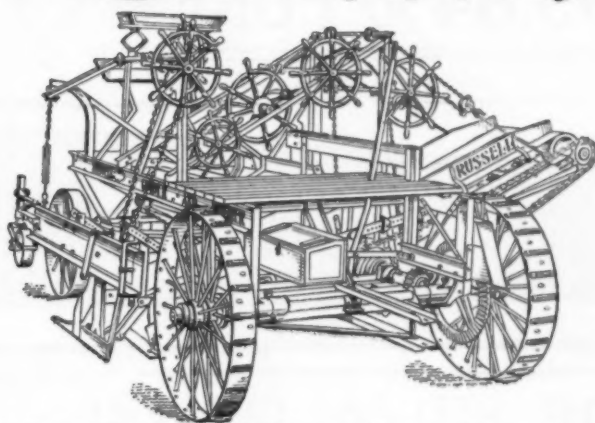
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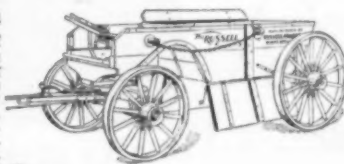
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### The American Standard

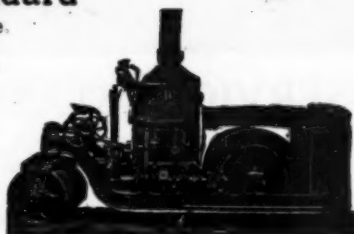
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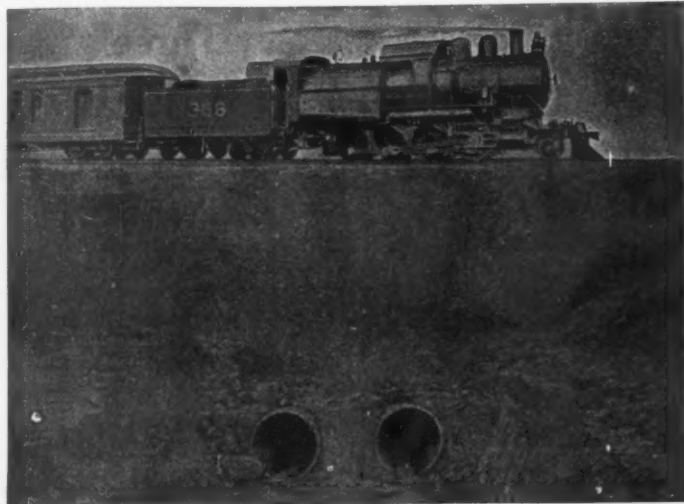
**The Marion Steam Shovel Co.**  
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ATLANTA, 1411 Candler Bldg.





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APPROVED BY MANY

SOUTHERN RAILROADS

The strength, light weight and lasting qualities of the

### VIRGINIA METAL CULVERT

Make it the best culvert for all uses. Made of American Ingot Iron.

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## Made of the Purest Iron Known

# 99.84% PURE



## AMERICAN INGOT IRON CORRUGATED CULVERTS

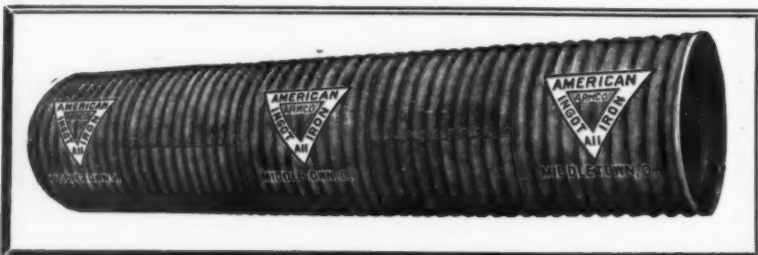
They have earned for themselves the name "Everlasting Culverts." The U. S. Government uses them. Many of the big railroads use them. You should use them, if you are looking for economy in the "long run."

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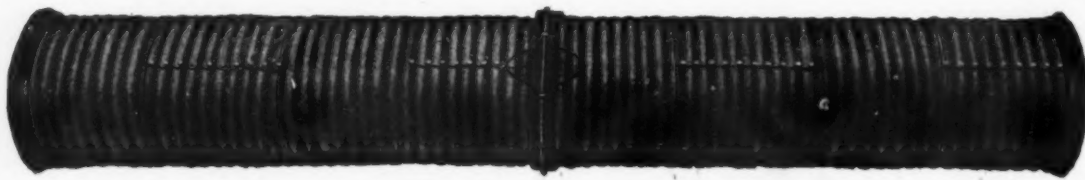
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Factory, ATLANTA, GA.

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Guaranteed 25 Years.

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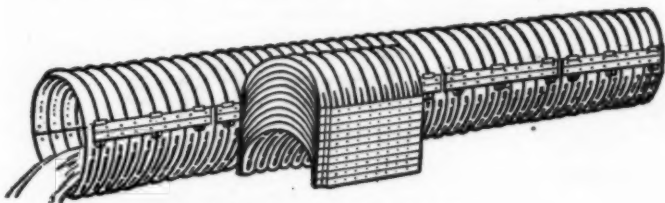
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(Patented)



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Every half section exactly alike.  
No holes cut in metal to catch water or oxygen.  
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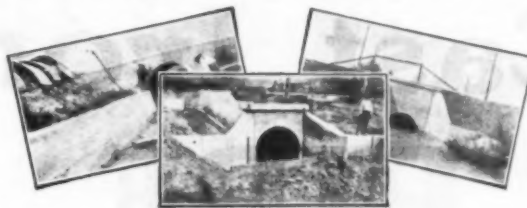
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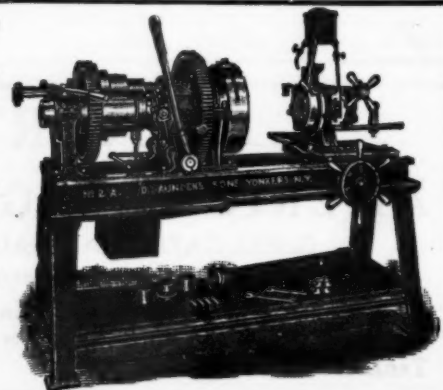
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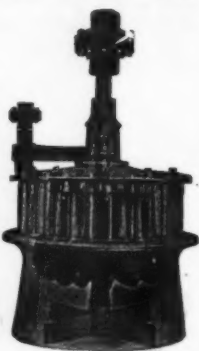
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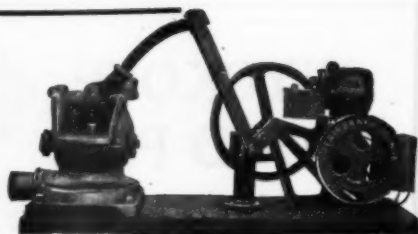
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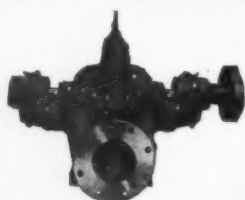
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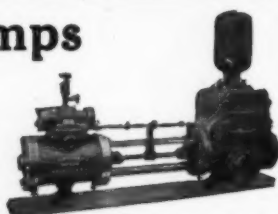
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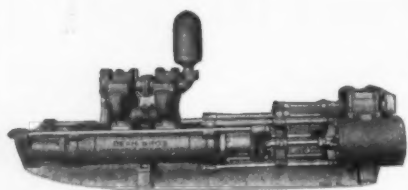
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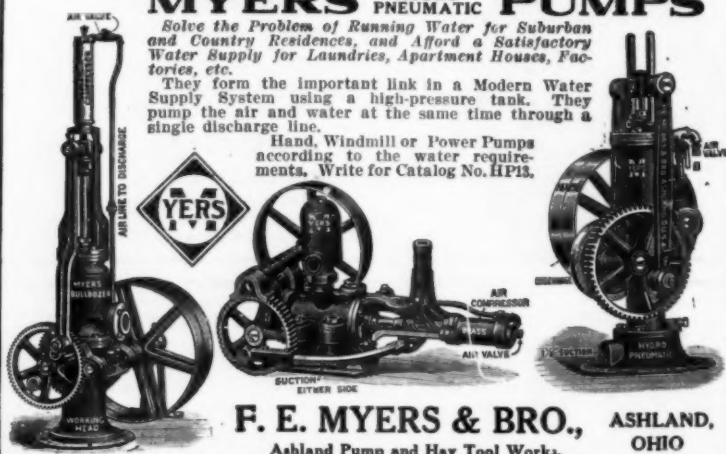
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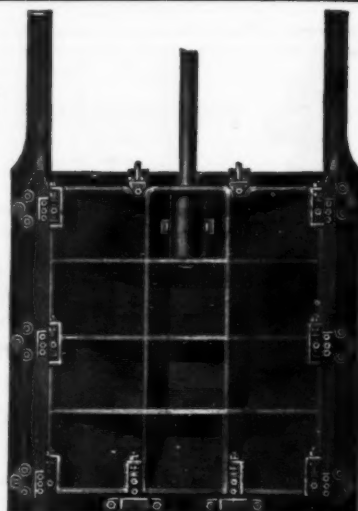
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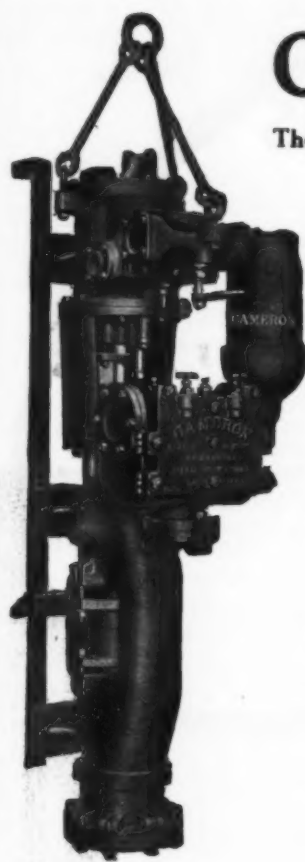
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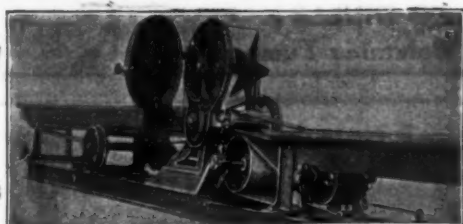
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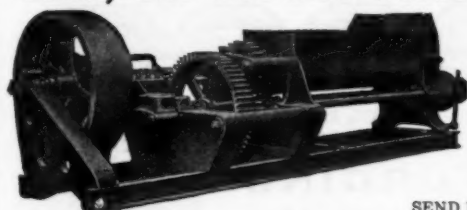
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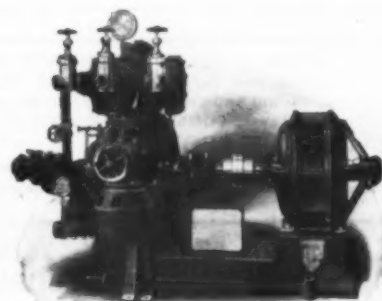
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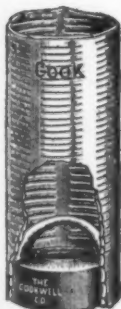
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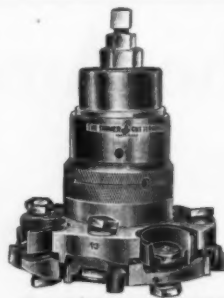
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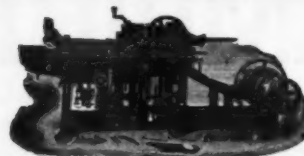
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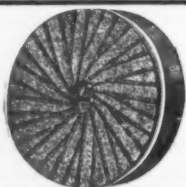
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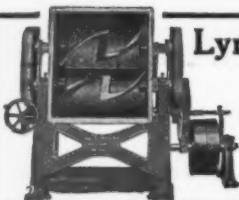
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## Manufacturers, Investors, Merchants, Farmers and Homeseekers

In the following pages leading railroads and a number of towns and cities invite your attention to the opportunities possessed by the rapidly developing South for every line of industry, for investments, and as a place for home-making in the city and on the farm.

The marvel of the day, commanding the world's attention to a greater extent probably than the development of any other section has ever received, is the amazing material upbuilding of the South. Everywhere men in every walk of life are beginning to study the South. They are coming to realize something of its matchless resources, to know something of the opportunities which it presents for manufacturing and for mining operations, for city building activities, for the utilization on a large scale of the cut-over timber lands and the reclaimable wet lands of the South.

With a view to presenting to the world from week to week the resources and the growth and the opportunities which are offered for all of these things, some of the leading railroads of the South and Southwest, some of the great public service corporations intimately identified with the upbuilding of this section and some of its progressive towns and cities from week to week tell the story of what they have to offer to the manufacturer, to the investor, to the merchant, to the pleasure-seeker, to the health-seeker. Study the pages that follow, and if you are at all interested in knowing about the South and its opportunities, its resources and its progress, if you want to keep in touch with that section which is attracting greater attention than any other part of America, get in communication with the organizations whose advertisements are to be found in the following pages.



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Rare opportunities for manufacturing in the heart of the South's most progressive section.  
A. B. & A. is liberal in its policy and offers every inducement to industrial enterprises.  
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You may profitably engage in the manufacture of

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And in the manufacture of products which require

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The raw materials lie all about, close at hand, and can be secured and assembled at small cost.

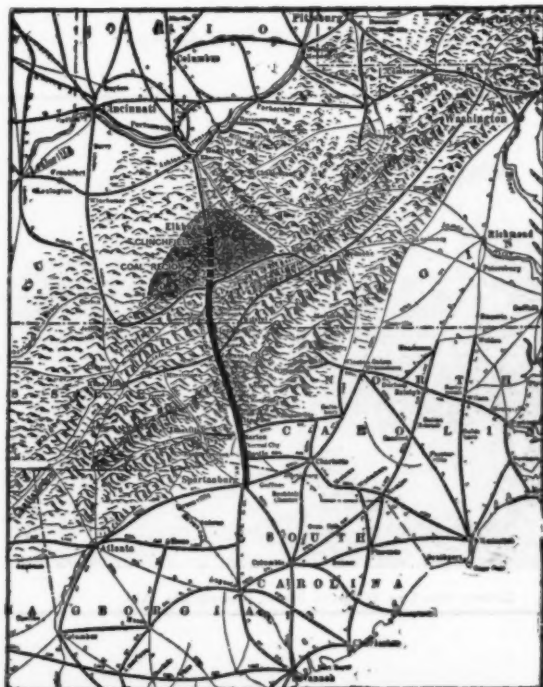
Coal can be produced at any place along the line of the road at comparatively low cost, and if water power is desired there are many streams that will furnish all that can be used.

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The land is cheap, the soil is rich, the climate is propitious, the growing season is long, the water is pure, the air is mild—in fact, all necessary conditions combine to make for profit in agriculture.

The Clinchfield connects with roads leading direct to all the best markets of the country, completing the advantages of this wonderful section.



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Choice Locations in Eleven States

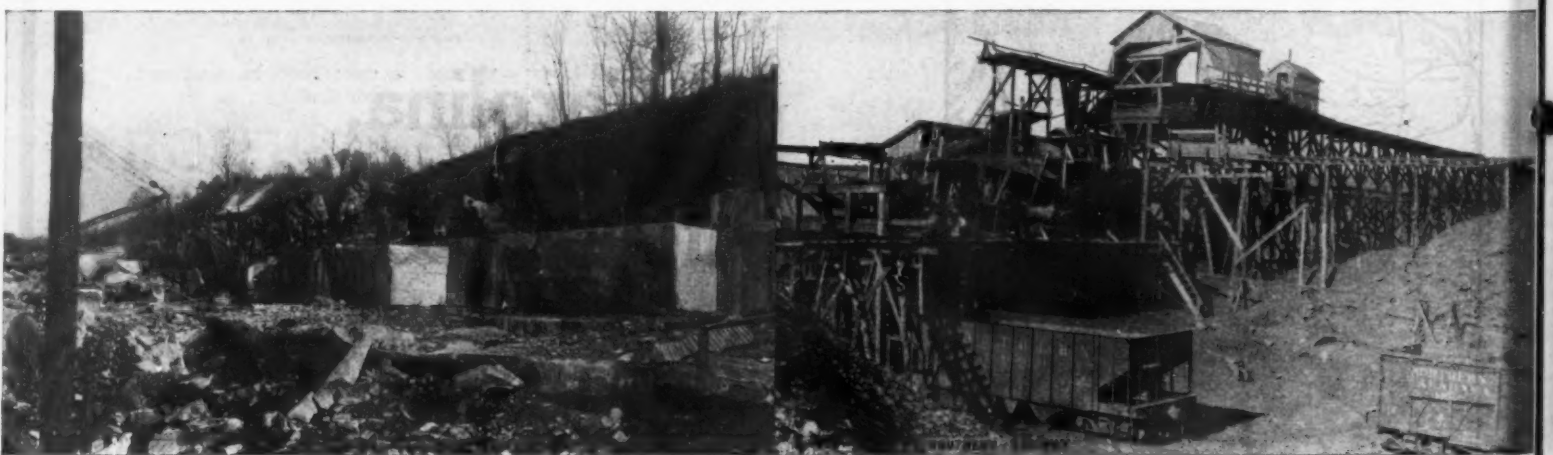
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*Through its Industrial and Agricultural Representatives the B. & O. would like to confer with you in the selection of a location for your new industry.*

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## Florida's Call To Men of Energy and Enterprise

Florida has been regarded as the land of romance, the home of adventure, the scene of out-door pleasures innumerable.

It is famed as the happy hunting ground of the sportsman, the paradise of the fisherman, the Eden of the florist, the land of delight for the naturalist.

All of which have combined to make Florida the "winter playground of the nation," and an ever-swelling number of visitors crowd its railroads and its hotels every year.

It has been and is all of these—in all of these capacities it is unapproached and unapproachable.

But it has latterly become more—much more.

It is the home of ambitious, purposeful men and women—of active, energetic, enterprising people who, looking from all parts of the country, have seen in Florida greater opportunities than elsewhere for building homes, establishing businesses and amassing fortunes.

It has become one of the most progressive States of the Union—its population increased 42.4 per cent. from 1900 to 1910, while the value of its twelve leading farm crops increased 126 per cent., the capital invested in its manufacturing enterprises 152 per cent., and the value of its factory products 112 per cent. in the same time.

Not only so, but the railroad mileage of Florida has grown from 2738 in 1900 to about 5000 in 1912.

So that the State that has so long lured those who loved it for its flowers, its game, its fish and its myriad invitations to enjoy life out of doors, is now proving still more attractive to those bent upon life's more earnest purposes, and is rapidly taking a place of great importance in the industrial and commercial world.

But with an area larger than any other Southern State east of the Mississippi River save one, Florida is much the smallest in population, and the opportunities that have been seized and turned to good account by those who have already gone there are few in proportion to those that lie ready to the grasp of those who are yet to go.

There is hardly a mile of the East Coast of Florida, from Jacksonville to Key West, that does not present its own individual opportunity for profit in manufacturing or agricultural pursuits.

*Information about this wonderful country cheerfully furnished those who write for it.*

### Florida East Coast Railway

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# South Florida's Continuous Crop Production

It is frequently recited that South Florida has a 350-day crop-producing season. What this means is that for practically the year 'round the farmer in this most favored area can produce a money crop.

In the early Autumn past the first citrus fruit was reaching the market.

Strawberries at Christmas time were eagerly sought by the trade.

Celery, lettuce, eggplant, beans, English peas followed rapidly.

A larger than ever production of earliest tomatoes has just been harvested at excellent prices, and the watermelons and cantaloupes are moving. Growers in Manatee County are preparing for another tomato crop, a variety quick growing, which will reach the market when no competition is offered.

The first bloom on the citrus trees has produced a good burden of fruit, which the ripening sun will soon turn to gold. The June bloom is coming and adds to the wealth of production.

The Avocado, Mango, Banana, Pineapple and the Lime find congenial soil and climate.

These productions are easily obtained in a climate healthful and pleasant the year 'round.

Flowing artesian water abounds.

Lands can be had at reasonable prices, from which an immediate return can be made.

The communities are growing, building hard roads and schoolhouses creditable to their progressive and prosperous citizenship.

Take a Summer trip to Florida and pick out your location. Round-trip rates at attractive prices.

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The Progressive Railway of the South

J. A. PRIDE, General Industrial Agent

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- Automobiles. (Second Hand.)**  
Mar-Dei Mobile Co., Baltimore, Md.
- Axles. (See Car Wheels, Axles and Trucks.)**
- Babbit Metal. [See Anti-Friction Metal.]**
- Balls.**  
Fanner Mfg. Co., The, Cleveland, Ohio.
- Bakelite Dilecto.**  
Continental Fibre Co., Newark, Del.
- Bakers' Machinery.**  
Lynn-Superior Co., The, Cincinnati, O.
- Bankers and Brokers.**  
Breed, Elliott & Harrison, Cincinnati, Ohio.  
Delaware Trust Co., Wilmington, Del.  
Electric Bond & Share Co., New York, N. Y.  
Glenn, W. S., Spartanburg, S. C.  
Halsey & Co., N. W., New York, N. Y.  
Lisman & Co., F. J., New York, N. Y.  
Mercantile Trust & Deposit Co., Balto., Md.  
New First National Bank, Columbus, O.  
Nuven & Co., John, Chicago, Ill.  
Peabody, Houghteling & Co., Chicago, Ill.  
Southern States Development Co., New York, N. Y.  
Thilston and Wolcott Co., The, Cleveland, Ohio.
- Banks.**  
First National Bank, Baltimore, Md.  
First Nat'l Bank, of Key West, Key West, Fla.  
First National Bank, Richmond, Va.  
Merchants-Mechanics' Nat'l Bank, Baltimore, Md.  
New First National Bank, Columbus, Ohio.  
National Exchange Bank, Baltimore, Md.  
Provident Savings Bank & Trust Co., Cincinnati, O.
- Bank and Office Railings and Grilles. (Iron)**  
Bolles Iron & Wire Wks., J. E., Detroit, Mich.  
Chesapeake Iron Works, Baltimore, Md.  
Cincinnati Mfg. Co., Cincinnati, O.  
Dow Wire & Iron Works, Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
Dufur, Baggett & Co., Baltimore, Md.  
Meyers Mfg. Co., F. J., Hamilton, O.  
Ohio Elevator & Machine Co., The, Columbus, O.
- Barges.**  
American Bridge Co., of New York, N. Y.
- Bar Iron. (Refined and Galvanized.)**  
Bourne-Fuller Co., The, Cleveland, Ohio.  
Carnegie Steel Co., Pittsburgh, Pa.  
Lackawanna Steel Co., Lackawanna, N. Y.
- Bars, Wire, Wire Fabric, etc. (For Reinforced Concrete.)**  
Cincinnati Iron & Steel Co., Cincinnati, O.  
Gulf States Steel Co., Birmingham, Ala.  
Hoffman & Co., Inc., R. O., Baltimore, Md.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
Laclede Steel Co., St. Louis, Mo.
- Bead. (Metal Corner.)**  
Penn Metal Co., Boston, Mass.
- Bearings. (Oilless.)**  
Metalline Co., Long Island City, N. Y.
- Bedford Stone.**  
Bedford Steam Stone Works, Bedford, Ind.
- Bells and Gongs.**  
National Tube Co., Pittsburgh, Pa.
- Belting. (Leather, Canvas, Rubber.)**  
American Supply Co., Providence, R. I.  
Bailey-Libby Co., Charleston, S. C.  
Baltimore Belting Co., Baltimore, Md.  
Cameron & Barkley Co., Charleston, S. C.  
Chesapeake Belting Co., Baltimore, Md.  
Dunk Oak Belting Co., Inc., Baltimore, Md.  
Gandy Belting Co., Baltimore, Md.
- Belting. (Chain.)**  
Bartlett & Snow Co., C. O., Cleveland, O.  
Bartlett & Snow Co., H. W., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Nicotown, (Philadelphia) Pa.
- Belting. (Cotton.)**  
Scandinavia Belting Co., New York, N. Y.
- Belt Conveyors.**  
Jeffrey Mfg. Co., Columbus, O.  
Scandinavia Belting Co., New York, N. Y.
- Belt Dressing.**  
Dixon Crucible Co., Joseph, Jersey City, N. J.  
Gandy Belting Co., Baltimore, Md.  
Graton & Knight Mfg. Co., Worcester, Mass.  
Philadelphia Belting Co., Philadelphia, Pa.  
Scandinavia Belting Co., New York, N. Y.
- Belt Lacing and Supplies. [See Belting.]**  
Leather, Canvas, Rubber.]
- Bicarbonate Soda. (Sap Stain Lumber Dip.)**  
Church & Dwight Co., New York, N. Y.  
Mathieson Alkali Works, Saltville, Va.
- Bit and Jar Steel.**  
Philadelphia Steel & Forge Co., New York, N. Y.
- Blackboards. (Slate.)**  
East Bangor Con. State Co., The, East Bangor, Pa.  
Johnson, E. J., New York, N. Y.
- Blocks. (Paving Cressed.)**  
American Cressote Works, New Orleans, La.
- Block Fillers.**  
Barber Asphalt Paving Co., Phila. Pa.  
Standard Oil Co., Newark, N. J.  
U. S. Asphalt Refining Co., New York, N. Y.
- Blowers and Exhaust Fans.**  
American Blower Co., Detroit, Mich.  
Buffalo Forge Co., Buffalo, N. Y.  
De Laval Steam Turbine Co., Trenton, N. J.  
General Electric Co., Schenectady, N. Y.  
Green Fuel Economizer Co., Matteawan, N. Y.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.  
South Atlantic Blow Pipe & Sheet Metal Co., Savannah, Ga.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.
- Boilers.**  
Abendroth & Root Mfg. Co., Newburgh, N. Y.  
Babcock & Wilcox Co., New York, N. Y.  
Cameron & Barkley Co., Charleston, S. C.  
Casey-Hedges Co., Chattanooga, Tenn.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Coatesville Boiler Works, Coatesville, Pa.  
Coto Mfg. Co., R. D., Newnan, Ga.  
Erie City Iron Works, Erie, Pa.  
Gibbs Machinery Co., Inc., Columbia, S. C.  
Harris Bros. Co., Chicago, Ill.  
Harley Boiler Works, Montgomery, Ala.  
Keeler Co., E., Williamsport, Pa.  
Keystone Boiler & Foundry Co., Columbia, Pa.  
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.  
Lombard Iron Works, Augusta, Ga.  
Mecklenburg Iron Works, Charlotte, N. C.  
Murray Iron Works, Baltimore, Md.  
New York Central Iron Works Co., Hagerstown, Md.  
Phoenix Iron Works Co., S. M., Norfolk, Va.  
Price Machinery Co., S. M., Norfolk, Va.  
Schofield Iron Works, Macon, Ga.  
Southern Engine & Boiler Works, Jackson, Tenn.  
Valk & Murdoch Iron Works, Charleston, S. C.  
Vogt Machine Co., Henry, Louisville, Ky.  
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
- Boiler Covering.**  
Chesapeake Roofing & Pipe Covering Co., Baltimore, Md.
- Boiler Graphite.**  
Dixon Crucible Co., Joseph, Jersey City, N. J.
- Boiler Tubes. [See Tubes, Boiler.]**
- Bolts, Nuts, Rivets, Studs and Washers.**  
Lebanon Valley Iron & Steel Co., Lebanon, Pa.  
Milton Mfg. Co., Milton, Pa.  
Progressive Mfg. Co., Torrington, Conn.  
Republic Iron & Steel Co., Youngstown, O.  
Upon Nut Co., The, Cleveland, O.
- Bonds. (Surety, etc.)**  
Fidelity & Deposit Co. of Balto., Baltimore, Md.
- Bottling Outfits.**  
Vilter Mfg. Co., Milwaukee, Wis.
- Brass Goods.**  
Bailey-Libby Co., Charleston, S. C.  
Buckeye Iron & Brass Works, Dayton, O.  
Lunkenheimer Co., The, Cincinnati, Ohio  
Powell Co., Wm., Cincinnati, O.
- Brass Railing and Grilles.**  
Newman Mfg. Co., Cincinnati, Ohio
- Brewers' Machinery.**  
Vilter Mfg. Co., Milwaukee, Wis.
- Brick. (Acid.)**  
Hood Brick Co., B. Mifflin, Atlanta, Ga.
- Brick. (Building.)**  
Am. Enamelled Brick & Tile Co., New York, N. Y.  
Brookhaven Pressed Brick & Mfg. Co., Brookhaven, Miss.
- Brick. (Enamelled.)**  
Am. Enamelled Brick & Tile Co., New York, N. Y.
- Brick. (Fire.)**  
Brookhaven Pressed Brick & Mfg. Co., Brookhaven, Miss.
- Brick. (Magnesia.)**  
Harbison-Walker Refractories Co., Pittsburgh, Pa.
- Brick. (Paving.)**  
Carlyle Paving Brick Co., Portsmouth, O.  
Cleveland-Ingalls Shale Brick Co., Birmingham, Ala.  
Dunk Wire-Cut-Log Brick Co., Conneaut, Ohio  
Standard Brick Co., Macon, Ga.
- Brick. (Silica.)**  
Harbison-Walker Refractories Co., Pittsburgh, Pa.
- Brick and Clayworking Machinery and Supplies.**  
Chase Fdry. & Mfg. Co., Columbus, O.  
Fernholtz Brick Machinery Co., St. Louis, Mo.  
Freese & Co., E. M., Gallon, O.  
Steele & Sons, J. C., Statesville, N. C.
- Bridges. (Concrete.)**  
Luten, Daniel B., Indianapolis, Ind.  
Requarth Co., C. W., Charlotte, N. C.  
Turner, C. A. F., Minneapolis, Minn.
- Bridges. (Rolling Lift.)**  
Scherzer Rolling Lift Bridge Co., Chicago, Ill.
- Bridges. (Steel.)**  
American Bridge Co. of New York, N. Y.  
Austin Bros., Atlanta, Ga.  
Belmont Iron Works, Philadelphia, Pa.  
Champion Bridge Co., Wilmington, Ohio.  
Chicago Bridge & Iron Works, Chicago, Ill.  
East St. Louis Bridge Co., East St. Louis, Ill.  
Greenberg Iron Co., A. L., Terre Haute, Ind.  
Harrison Bridge Co., Lebanon, Ohio.  
Richmond Structural Steel Co., Richmond, Va.  
Scherzer Rolling Lift Bridge Co., Chicago, Ill.  
Vincennes Bridge Co., Vincennes, Ind.  
Virginia Bridge & Iron Co., Roanoke, Va.
- Bridge and Structural Iron Paints.**  
Chattanooga Paint Co., Chattanooga, Tenn.
- Brimstone.**  
Union Sulphur Co., New York, N. Y.
- Brushes.**  
Felton Brush Co., D. D., The, Atlanta, Ga.
- Buckets. (Bottom-dumping for Concrete, Fertilizer, etc.)**  
Stuebner Iron Works, G. L., Long Island City, N. Y.
- Buckets. (Clam Shell, Orange Peel, etc.)**  
Austin Machinery Co., W. E., Atlanta, Ga.  
Hayward Company, New York, N. Y.  
Williams Company, G. H., Cleveland, Ohio.
- Buckets. (Dredging, Excavating, Sewer, etc.)**  
Hayward Co., New York, N. Y.  
Mongham Mch. Co., Chicago, Ill.  
Williams Co., The G. H., Cleveland, O.
- Buckets. (Grab.)**  
Hunt Co., Inc., C. W., West New Brighton, N. Y.
- Buckets. (Ore Handling.)**  
Caldwell & Son Co., H. W., Chicago, Ill.  
Hayward Co., New York, N. Y.  
Link-Belt Co., Nicotown (Philadelphia), Pa.  
Smith Co., T. L., Atlanta, Ga.  
Williams Co., The G. H., Cleveland, O.
- Buhr Stones.**  
Starr Co., B. F., Baltimore, Md.
- Builders and Contractors.**  
Austin Bros., Atlanta, Ga.  
Caldwell-Wingate Co., Atlanta, Ga.  
Grandy, C. F., Greenville, S. C.  
Selden-Breck Construction Co., St. Louis, Mo.  
Stone & Webster Eng. Corp., Boston, Mass.  
Turner, C. A. F., Minneapolis, Minn.  
White Companies, J. G., New York, N. Y.
- Building Stone.**  
Bedford Steam Stone Works, Bedford, Ind.
- Building Supplies.**  
Harris Bros. Co., Chicago, Ill.  
Southern Building Material Co., Norfolk, Va.
- Burners. (Oil.) [See Fuel Oil Equipments.]**
- Bushings. (Oilless, for Loose Pulleys.)**  
Metalline Co., Long Island City, N. Y.
- Cables. (Underground.)**  
Safety Insulated Wire & Cable Co., New York, N. Y.
- Cables and Wires. (Insulated.)**  
Safety Insulated Wire & Cable Co., New York, N. Y.
- Cableways. (Overhead Suspension.)**  
Austin Machinery Co., W. E., Atlanta, Ga.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
Flory Mfg. Co., S., Bangor, Pa.  
Lidgerwood Mfg. Co., New York, N. Y.  
Roebing's Sons Co., John A., Trenton, N. J.
- Can and Box Making Machinery. (Tin.)**  
Bliss Co., E. W., Brooklyn, N. Y.
- Canning Machinery and Supplies.**  
Robins & Co., A. K., Baltimore, Md.  
Sprague Canning Machinery Co., Chicago, Ill.
- Caps. (Roofing.)**  
Robertson Steel & Iron Co., W. F., Cincinnati, O.
- Carborundum Paper and Cloth.**  
Carborundum Co., Niagara Falls, N. Y.
- Cars. (Dump, Industrial, Logging and Mine.)**  
Austin Mfg. Co., Chicago, Ill.  
Chase Fdry. & Mfg. Co., Columbus, O.  
Curd, Geo. B., Cincinnati, Ohio  
Easton Car & Construction Co., Easton, Pa.  
Electric Wheel Co., Quincy, Ill.  
Georgia Car & Locomotive Co., Atlanta, Ga.  
Hunt Co., C. W., Inc., West New Brighton, N. Y.  
Oliver Mfg. Co., Wm. J., Knoxville, Tenn.  
Smith Co., T. L., Atlanta, Ga.  
Western Wheel Scrap Co., Aurora, Ill.
- Cars. (Motor, Gasoline.)**  
White Co., The, Cleveland, Ohio.
- Cars. (Passenger and Freight.) [See Railroad Equipment and Supplies.]**
- Car Wheels, Axles and Trucks.**  
Carnegie Steel Co., Pittsburgh, Pa.  
Oliver Mfg. Co., Wm. J., Knoxville, Tenn.
- Cast Iron Pipe. (See Pipe.) [Cast Iron.]**
- Castings. (Aluminum.)**  
Aluminum Company of America, Pittsburgh, Pa.
- Castings. (Brass and Bronze.)**  
McKenna Bros. Brass Co., Pittsburgh, Pa.  
Triumph Electric Co., Cincinnati, O.
- Castings. (Gray Iron.)**  
Columbian Iron Works, Chattanooga, Tenn.  
Georgia Car & Locomotive Co., Atlanta, Ga.  
Glanmorgun Pipe & Foundry Co., Lynchburg, Va.  
Lynchburg Foundry Co., Lynchburg, Va.  
Phoenix Iron Works Co., Meadville, Pa.  
Poole Engineering & Machine Co., Baltimore, Md.  
S. S. Cast Iron Pipe & Fdry. Co., Burlington, N. J.  
Valk & Murdoch Iron Works, Charleston, S. C.  
Westbrook Elevator Co., Danville, Va.  
Withers Fdry. & Mch. Wks., Atlanta, Ga.
- Castings. (Malleable Iron and Steel.)**  
Columbus Malleable Iron Co., Columbus, Ohio.  
Fanner Mfg. Co., The, Cleveland, O.  
General Malleable Co., Warren, O.  
Marion Malleable Iron Works, The, Marion, Ind.  
Missouri Malleable Iron Co., East St. Louis, Ill.
- Castings. (Municipal.)**  
Chickasaw Iron Work, Memphis, Tenn.
- Castings. (Steel.)**  
Allen American Manganese Steel Co., Edgar, Chicago, Ill.  
Crucible Steel Castings Co., Lansdowne, Pa.  
Hoffman & Co., Inc., R. O., Baltimore, Md.  
Phoenix Iron Works Co., Meadville, Pa.  
Riverside Steel Casting Co., Newark, N. J.
- Ceilings. (Metal.)**  
Edwards Manufacturing Co., Cincinnati, O.  
Keighley Metal Cell. & Mfg. Co., S., Pittsburgh, Pa.  
Milwaukee Artistic Metal Ceiling Co., Milwaukee, Wis.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Cement.**  
Climchfield Portland Cem. Corp., Kingsport, Tenn.  
Dixie Portland Cement Co., Chattanooga, Tenn.  
Hartman Cement Co., Wm. G., Philadelphia, Pa.  
Kirkpatrick Sand & Cement Co., Birmingham, Ala.  
Kosmos Portland Cement Co., Inc., Louisville, Ky.  
Lehigh Portland Cement Co., Allentown, Pa.  
Security Cement & Lime Co., Hagerstown, Md.  
Southern States Portland Cem. Co., Rockmart, Ga.  
Standard Portland Cement Co., Leeds, Ala.
- Cement Machinery.**  
Aising Engineering Co., J. R., New York, N. Y.  
Power & Mining Machinery Co., Oudahy, Wis.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
- Chains. (Dredge, Quarry, Steam Shovel.)**  
Weimer Chain & Iron Co., Lebanon, Pa.
- Chemists. (Analytical and Consulting.)**  
Davis, Geo. C., Philadelphia, Pa.  
Froehling & Robertson, Richmond, Va.  
Hunt & Co., Robt. W., Chicago, Ill.  
Pittsburgh Testing Laboratory, Pittsburgh, Pa.  
Wiley & Co., Baltimore, Md.
- Chloride Accumulator.**  
Electric Storage Battery Co., The, Philadelphia, Pa.
- Chucks.**  
Morse Twist Drill & Mch. Co., New Bedford, Mass.
- Chutes. (Concrete.)**  
Austin Machinery Co., W. E., Atlanta, Ga.
- Cities and Towns. (Commercial and Industrial Opportunities.) [See Industrial, Agricultural and Commercial Opportunities.]**
- Clamps. (For Concrete Forms.)**  
Sterling Wheelbarrow Co., Milwaukee, Wis.
- Clayworking Machinery. [See Brick and Clayworking Machinery.]**
- Cleaning Compound. (Floors, Etc.)**  
India Alkali Works, Boston, Mass.
- Clocks. (Watchman.)**  
Watchman's Clock & Supply Co., New York, N. Y.
- Clutches. (Friction.)**  
Affiliated Manufacturers Co., Milwaukee, Wis.  
Edgemont Machine Co., The, Dayton, Ohio.  
Medart Patent Pulley Co., St. Louis, Mo.
- Coal.**  
Climchfield Coal Corp., Dante, Va.  
Climchfield Fuel Co., Spartanburg, S. C.  
Consolidation Coal Co., Inc., New York, N. Y.  
Tennessee Coal, Iron & R. R. Co., B'm'gh'm, Ala.
- Coal Cutters.**  
Jeffrey Mfg. Co., Columbus, O.
- Coal Handling Machinery.**  
Bartlett & Snow Co., C. O., Cleveland, O.  
Guarantee Construction Co., New York, N. Y.  
Hayward Co., New York, N. Y.  
Hunt Co., C. W., Inc., West New Brighton, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Nicotown (Philadelphia), Pa.  
Stuebner Iron-Works, G. L., Long Island City, N. Y.
- Coal Tar and By-Products.**  
Barrett Mfg. Co., Philadelphia, Pa.
- Coal Tipples.**  
American Bridge Co. of New York, N. Y.
- Coke.**  
Tennessee Coal, Iron & R. R. Co., B'm'gh'm, Ala.
- Colleges and Schools.**  
Rensselaer Polytechnic Institute, Troy, N. Y.  
Virginia Polytechnic Institute, Blacksburg, Va.
- Colleges. (Agricultural.)**  
Virginia Polytechnic Institute, Blacksburg, Va.
- Colleges. (Technical.)**  
Rensselaer Polytechnic Institute, Troy, N. Y.  
Virginia Polytechnic Institute, Blacksburg, Va.
- Columns. (Porch, Interior, Pergola.)**  
Nickerson Mfg. Co., Knoxville, Tenn.
- Concrete Construction. (Reinforced.)**  
Berry-Fortune Construction Co., Easton, Ga.  
Foster-Oreighon-Gould Co., Nashville, Tenn.  
Guarantee Construction Co., New York, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Requarth Co., C. W., Charlotte, N. C.  
Turner, C. A. F., Minneapolis, Minn.
- Concrete Products.**  
Gray Concrete Co., Thomasville, N. C.
- Concrete Curb Protector. (Steel.)**  
Steel Protected Concrete Co., Philadelphia, Pa.
- Concrete Mixers. [See Mixers. (Concrete).]**
- Concrete Reinforcing Bars.**  
Bourne-Fuller Co., The, Cleveland, Ohio.  
Carnegie Steel Co., Pittsburgh, Pa.  
Gulf States Steel Co., Birmingham, Ala.  
Hoffman & Co., R. O., Baltimore, Md.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
Lackawanna Steel Co., Lackawanna, N. Y.  
Laclede Steel Co., St. Louis, Mo.  
Republic Iron & Steel Co., Youngstown, O.
- Concrete Reinforcing Wire and Wire Fabric.**  
American Steel & Wire Co., Chicago, Ill.  
Armstrong Co., L., Columbia, S. C.  
Roebing's Sons Co., John A., Trenton, N. J.
- Condensers.**  
Allger Pump & Condenser Co., New York, N. Y.  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Cresson-Morris Co., Philadelphia, Pa.  
Dean Bros., Steam Pump Wks., Indianapolis, Ind.  
Westinghouse Machine Co., Pittsburgh, Pa.  
York Mfg. Co., York, Pa.
- Conductor Pipe.**  
Edwards Mfg. Co., Cincinnati, O.  
Hussey & Co., O. G., Pittsburgh, Pa.  
Milwaukee Artistic Metal Ceiling Co., Milwaukee, Wis.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Contractors. (Concrete.)**  
Berry-Fortune Construction Co., Easton, Ga.



- Contractors.** (Hydro-Electric Developments.)  
Bequith Co., C. W., Charlotte, N. C.
- Contractors.** (Water Supply.)  
Layne & Bowler Co., Houston, Tex.
- Contractor's Machinery and Supplies.** [See also Hoisting Machinery.]  
American Clay Machinery Co., The, Bucyrus, Ohio.  
American Hoist & Derrick Co., St. Paul, Minn.  
American Locomotive Co., New York, N. Y.  
Austin Machinery Co., W. E., Atlanta, Ga.  
Austin Mfg. Co., Chicago, Ill.  
Byers Mach. Co., The John F., Ravenna, O.  
Contractors' Service Co., New York, N. Y.  
Curd, Geo. B., Cincinnati, O.  
Farquhar Mfg. Co., Ltd., A. B., York, Pa.  
Flory Mfg. Co., S., Bangor, Pa.  
Hyde Bros. Steel & Rail Co., Pittsburgh, Pa.  
Marine Metal & Supply Co., New York, N. Y.  
Milburn Co., Alex. N., Baltimore, Md.  
Monaghan Mch. Co., Chicago, Ill.  
National Hoisting Engine Co., Harrison, N. J.  
Oliver Mfg. Co., Wm. J., Knoxville, Tenn.  
Pipe & Contruction Supply Co., New York, N. Y.  
Sherwood, E. C., New York, N. Y.  
Smith Co., T. L., Atlanta, Ga.  
Southern Mch. & Equipment Co., Lynchburg, Va.  
Sterling Machinery Co., New York, N. Y.
- Conveying and Elevating Machinery.**  
Austin Machinery Co., W. E., Atlanta, Ga.  
Bartlett & Snow Co., O. O., Cleveland, O.  
Caldwell & Son Co., H. W., Chicago, Ill.  
Fry Mfg. Co., S., Bangor, Pa.  
Guarantee Construction Co., New York, N. Y.  
Hunt Co., C. W., Inc., West New Brighton, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Lidgerwood Mfg. Co., New York, N. Y.  
Link-Belt Co., Nictown, Philadelphia, Pa.  
Mathews Gravity Carrier Co., Ellwood City, Pa.  
McLanahan-Stone Mach. Co., Hollidaysburg, Pa.
- Cooperage, Stock and Box Shook Machinery.**  
Gerlach Co., Peter, Cleveland, O.
- Coppersmith.**  
Hoffman-Ablers Co., Cincinnati, Ohio.  
McMillan Bros., Jacksonville, Fla.
- Cordage.**  
American Mfg. Co., Brooklyn, N. Y.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
Columbian Rope Co., Auburn, N. Y.  
International Cotton Mills, New York, N. Y.  
Plymouth Cordage Co., North Plymouth, Mass.  
St. Louis Cordage Mills, St. Louis, Mo.  
Waterbury Co., New York, N. Y.
- Core/Ovens.**  
Oven Equipment & Mfg. Co., The, New Haven, Conn.  
Corner Bead, (Metal.)  
Penn Metal Co., Boston, Mass.
- Corn-Mill Machinery.**  
Norfolk & Marmon Co., Indianapolis, Ind.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.  
Starr Co., B. F., Baltimore, Md.  
Wolf Co., Chambersburg, Pa.
- Cotton Duck.**  
International Cotton Mills, New York, N. Y.
- Cotton Oil and Products.**  
American Cotton Oil Co., New York, N. Y.
- Cotton Yarns.** (Commission Merchants.)  
Paulson, Linkwood & Co., New York, N. Y.
- Cotton-Gin Machinery.**  
Carver Cotton Gin Co., East Bridgewater, Mass.  
Continental Gin Co., Ala.  
Gibbs Machinery Co., Inc., Columbia, S. C.  
Murray Co., The, Atlanta, Ga.
- Cotton-Mill Machinery.**  
Draper Co., Hopedale, Mass.  
Mason Machine Works, Taunton, Mass.  
Saco-Lowell Shop, Boston, Mass.  
Whittemore Spinning Ring Co., Whittemore, Mass.
- Cotton-Mill Supplies.**  
American Supply Co., Providence, R. I.  
Whittemore Spinning Ring Co., Whittemore, Mass.
- Cottonseed-Oil Machinery.**  
Buckeye Iron & Brass Works, Dayton, O.  
Burruss Engineering Co., Atlanta, Ga.  
Cardwell Machine Co., Richmond, Va.  
Carver Cotton Gin Co., East Bridgewater, Mass.  
Continental Gin Co., Birmingham, Ala.  
French Oil Mill Machinery Co., Piqua, O.  
Murray Co., The, Atlanta, Ga.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
- Counting and Weighing Machines.** (For Industrial Plants.)  
National Scale Co., Chicopee Falls, Mass.
- Couplings.**  
American Spiral Pipe Works, Chicago, Ill.  
Golden's Foundry & Machine Co., Columbus, Ga.  
Wood's Sons Co., T. B., Chambersburg, Pa.
- Couplings.** (Car.)  
National Tube Co., Pittsburgh, Pa.  
Weimer Chain & Iron Co., Lebanon, Pa.
- Couplings.** (Hose, Air, Gas, Steam and Water.)  
National Tube Co., Pittsburgh, Pa.
- Coverings.** (Pipe, Boiler, etc.)  
John-Manville Co., H. W., New York, N. Y.  
Southern Asbestos Mfg. Co., Inc., Richmond, Va.
- Cranes.** (Locomotive.)  
American Hoist & Derrick Co., St. Paul, Minn.  
Ohio Locomotive Crane Co., Bucyrus, O.
- Cranes.** (Traveling, Hand, Power, Hydraulic.)  
Lane Mfg. Co., Montpelier, Vt.  
Speidel, J. G., Reading, Pa.
- Crayons.**  
Georgia Talc Co., Asheville, N. C.  
Lowell Crayon Co., Lowell, Mass.
- Crosscutting Equipment.**  
Casey-Hedges Co., Chattanooga, Tenn.  
Struthers-Wellis Co., Warren, Pa.  
Walsh & Weider Boiler Co., Chattanooga, Tenn.
- Crosscutting Works.**  
American Crosscut Works, New Orleans, La.  
Internat'l Crosscut & Cons. Co., Galveston, Tex.  
National Lumber & Crosscut Co., Texarkana, Ark.  
Southern Crosscutting Co., Ltd., Slidell, La.  
Southern Wood Preserving Co., Atlanta, Ga.
- Crossarms and Pins.**  
Western Electric Co., New York, N. Y.
- Crossarms.** (Crosscut.)  
American Crosscut Wks., New Orleans, La.  
Internat'l Crosscutting & Cons. Co., Galveston, Tex.  
National Lumber & Crosscutting Co., Texarkana, Ark.  
Southern Crosscutting Co., Ltd., Slidell, La.  
Southern Wood Preserving Co., Atlanta, Ga.
- Crossings.** [See Railroad Frogs and Switches.]
- Crosstie Machine.**  
Standard Portable Saw Mill Co., New Orleans, La.
- Crossties.** (Crosscut.)  
American Crosscut Works, New Orleans, La.  
Internat'l Crosscut & Cons. Co., Galveston, Tex.  
National Lumber & Crosscut Co., Texarkana, Ark.  
Southern Crosscutting Co., Ltd., Slidell, La.  
Southern Wood Preserving Co., Atlanta, Ga.
- Crossties.** (Steel.)  
Carnegie Steel Co., Pittsburgh, Pa.
- Crushed Stone.**  
American Ballast Co., Knoxville, Tenn.  
Balfour Quarry Co., Asheville, N. C.  
Chickamauga Quarry & Construction Co., Chattanooga, Tenn.  
Kirkpatrick Sand & Cement Co., Birmingham, Ala.  
Weston Brooker Quarry Co., Columbia, S. C.
- Crushers.** (Corn and Cob.)  
Grundert Pat. Crusher & Pulv. Co., St. Louis, Mo.  
Jeffrey Mfg. Co., Columbus, O.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
- Crushers.** (Rock.)  
Austin Machinery Co., W. E., Atlanta, Ga.  
Austin Mfg. Co., Chicago, Ill.  
Buchanan Co., Inc., C. G., New York, N. Y.  
Power & Mining Machinery Co., Oudaby, Wis.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.  
Smith Co., T. L., Atlanta, Ga.  
Universal Road Mch. Co., Kingston, N. Y.  
Western Wheel Scraper Co., Aurora, Ill.  
Wheeling Mold & Fdry. Co., Wheeling, W. Va.
- Crushing and Pulverizing Machinery.**  
Aising Engineering Co., J. H., New York, N. Y.  
Austin Machinery Co., W. E., Atlanta, Ga.  
Austin Mfg. Co., Chicago, Ill.  
Bartlett & Snow Co., O. O., Cleveland, O.  
Buchanan Co., Inc., C. G., New York, N. Y.  
Grundert Pat. Crusher & Pulv. Co., St. Louis, Mo.  
Greenburg Iron Co., A. L., Terre Haute, Ind.  
McLanahan-Stone Mach. Co., Hollidaysburg, Pa.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.  
Stedman's Foundry & Machine Works, Aurora, Ind.  
Western Wheel Scraper Co., Aurora, Ill.  
Wheeling Mold & Fdry. Co., Wheeling, W. Va.
- Culvert Pipe.** (Cast Iron.)  
American Cast Iron Pipe Co., Birmingham, Ala.  
Olson & Sons, James H., Chicago, Ill.  
Donaldson Iron Co., Evans, Pa.  
Glanorgan Pipe & Foundry Co., Lynchburg, Va.  
Lynchburg Foundry Co., Lynchburg, Va.  
Massillon Iron & Steel Co., Massillon, Ohio.  
Standard Cast Iron Pipe & Foundry Co., Bristol, Pa.  
Wood & Co., R. D., Philadelphia, Pa.
- Culverts.** (Corrugated Metal.)  
American Sheet & Tin Plate Co., Pittsburgh, Pa.  
Armco Culvert Publicity Bureau, Cincinnati, O.  
Atlas Metal Works, Dallas, Tex.  
Birmingham Metal Products Co., Birmingham, Ala.  
Canton Culvert Co., The, Canton, O.  
Dixie Culvert & Metal Co., Atlanta, Ga.  
Gallon Iron Works & Mfg. Co., The, Gallon, Ohio.  
Greenburg Iron Co., A. L., Terre Haute, Ind.  
Harry Bros. Co., Newport, Ky.  
Lone Star Culvert Co., Houston, Tex.  
National Corrugated Culvert Mfg. Co., Warren, Pa.  
New Orleans Roofing & Metal Wks., New Orleans, La.
- Culverts.** (Vitrified Pipe.)  
Bibb Sewer Pipe Co., Macon, Ga.  
Southern Sewer Pipe Co., Birmingham, Ala.  
Stevens Sons Co., H., Macon, Ga.
- Cupola Furnaces.**  
Faxon Co., J. W., Philadelphia, Pa.
- Curb Protector.** (Steel.)  
Steel Protected Concrete Co., Philadelphia, Pa.
- Cuts.** (Half-tone, Line, etc.)  
Baltimore-Md. Engraving Co., Baltimore, Md.
- Cutter Heads.** (Woodworking.)  
Skinner & Sons, Samuel J., Milton, Pa.
- Cutter Grinders.**  
Vitrified Wheel Co., Westfield, Mass.
- Dams.** (Reinforced Concrete.)  
Berry-Fortune Construction Co., Eatonton, Ga.
- Derricks and Derrick Fittings.**  
American Hoist & Derrick Co., St. Paul, Minn.  
Byers Mach. Co., The John F., Ravenna, O.  
Hayward Co., The, New York, N. Y.  
Monaghan Machine Co., Chicago, Ill.  
Saggen Derrick Co., Chicago, Ill.
- Designers and Illustrators.** (Printed Matter.)  
Baltimore, Md. Engraving Co., Baltimore, Md.
- Distilling Apparatus.**  
Hoffman-Ablers Co., Cincinnati, Ohio.
- Ditching Machinery.**  
American Hoist & Derrick Co., St. Paul, Minn.  
American Locomotive Co., New York, N. Y.  
Fairbanks Steam Shovel Co., Marion, O.  
Gade Excavating Co., The, Iowa Falls, Iowa.  
Hayward Co., The, New York, N. Y.  
Marion-Osgood Co., Marion, O.  
Marion Steam Shovel Co., Marion, O.  
Monaghan Machine Co., Chicago, Ill.  
Williams Co., The, G. H., Cleveland, O.
- Doors.** (Steel Rolling.)  
Kinner Mfg. Co., Columbus, O.
- Doors.** (Tin Clad.)  
Victor Mfg. Co., Newburyport, Mass.
- Doors, Sash and Blinds.**  
Columbus Iron Works, Columbus, Ga.
- Draftsmen's Supplies.**  
Weber & Co., F., Philadelphia, Pa.
- Dredge Chains.**  
Weimer Chain & Iron Co., Lebanon, Pa.
- Dredge Cutters.**  
Norhom Engineering Co., Philadelphia, Pa.
- Dredges.** [See Excavating Machinery.]
- Drills.** (Electric.)  
Fort Wayne Electric Works, Fort Wayne, Ind.
- Drills.** (Pneumatic.) [See also Drills Rock and Mining.]
- Drills.** (Prospecting.)  
Fort Wayne Electric Works, Madison, Wis.  
Keystone Steam Well Mach. Co., Beaver Falls, Pa.
- Drills.** (Rock and Mining.)  
Fort Wayne Electric Works, Madison, Wis.  
Independent Pneumatic Tool Co., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, O.  
Wicks Bros., Jersey City, N. J.
- Drills.** (Twist.)  
McKenna Bros. Brass Co., Pittsburgh, Pa.  
Morse Twist Drill & Mch. Co., New Bedford, Mass.
- Drive Well Points and Well Supplies.**  
National Tube Co., Pittsburgh, Pa.
- Drop Forgings.**  
American Spiral Pipe Works, Chicago, Ill.
- Drop Forging Machinery.**  
Bliss Co. E. W., Brooklyn, N. Y.
- Dry Docks.** (Builders of)  
American Bridge Co. of New York, N. Y.
- Drying Machinery.**  
American Process Co., New York, N. Y.  
Bailey-Libby Co., The, Charleston, S. C.  
Buffalo Forge Co., Buffalo, N. Y.  
Coatesville, Boiler Works, Coatesville, Pa.  
Cummer & Son Co., F. D., The, Cleveland, Ohio  
Hersey Manufacturing Co., South Boston, Mass.  
Oven Equipment & Mfg. Co., The, New Haven, Conn.  
Ruggles-Cole Engineering Co., New York, N. Y.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.
- Dry Kilns.**  
Buffalo Forge Co., Buffalo, N. Y.  
Moore Dry Kiln Co., L., Jacksonville, Fla.
- Dry Kiln Equipment.**  
Moore Dry Kiln Co., L., Jacksonville, Fla.
- Dumbwaiters.** (Hand Power.)  
McKenna Bros. Brass Co., Pittsburgh, Pa.  
Speidel, J. G., Reading, Pa.
- Dump Wagons and Wagon Boxes.**  
Troy Wagon Works Co., Troy, O.
- Dust-Collecting Systems.**  
Buffalo Forge Co., Buffalo, N. Y.  
Kling Co., F. E., Norfolk, Va.  
South Atlantic Blow Pipe & Sheet Metal Co., Savannah, Ga.
- Dynamite.** (Industrial and Agricultural.)  
Atlas Powder Co., Wilmington, Del.  
Du Pont De Nemours Powder Co., E. I., Wilmington, Del.  
Jefferson Powder Co., Birmingham, Ala.  
Keystone Nat'l Powder Co., Emporium, Pa.
- Dynamos and Motors.**  
Assets Purchasing Co., Wheeling, W. Va.  
Fort Wayne Electric Works, Fort Wayne, Ind.  
General Electric Co., Schenectady, N. Y.  
Korring & Mathewson, New York, N. Y.  
Terry Steam Turbine Co., Hartford, Conn.  
Triumph Electric Co., Cincinnati, Ohio.  
Western Electric Co., New York, N. Y.
- Leaves.** (Trough.)  
Edwards Mfg. Co., Cincinnati, O.  
Hussey & Co. C. G., Pittsburgh, Pa.  
Milwaukee Artistic Metal Ceiling Co., Milwaukee, Wis.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Ejectors.** (Sewage.)  
Lunkensheimer Co., The, Cincinnati, O.  
Pacific Flush Tank Co., New York, N. Y.
- Electric Machinery.** (Dynamos, Generators, Motors, etc.)  
Allie-Chalmers Manufacturing Co., Milwaukee, Wis.  
American Machine Co., Louisville, Ky.  
Crocker-Wheeler Co., Amper, N. J.  
Engberg Electric & Mechanical Works, St. Joseph, Mich.  
Fairbanks-Morse & Co., Atlanta, Ga.  
Fort Wayne Electric Works, Fort Wayne, Ind.  
General Electric Co., Schenectady, N. Y.  
Heer Engine Co., Portsmouth, O.  
Lee Electric Co., Baltimore, Md.  
Piedmont Electric Co., Asheville, N. C.  
Robbins & Myers Co., Springfield, O.  
Schneider Electric Co., Philadelphia, Pa.  
Schroeder Electric Co., Evansville, Ind.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.  
Triumph Electric Co., Cincinnati, O.  
Wilson Mch. Co., Harold R., St. Louis, Mo.  
Wilson-Maltman Electric Co., Baltimore, Md.
- Electrical Contractors, Instruments and Supplies.**  
Carroll Electric Co., Washington, D. C.  
Crocker-Wheeler Co., Amper, N. J.  
Economy Fuse & Mfg. Co., Chicago, Ill.  
Fort Wayne Electric Works, Fort Wayne, Ind.  
General Electric Co., Schenectady, N. Y.  
Hill & Co., Walter E., Baltimore, Md.  
John-Manville Co., H. W., New York, N. Y.  
Lee Electric Co., Baltimore, Md.  
Lerr-Morton Co., Columbus, Ga.  
Miller Owens Electric Co., Pittsburgh, Pa.  
Piedmont Electric Co., Asheville, N. C.  
Robbins & Myers Co., Springfield, O.  
Wilson-Maltman Electric Co., Baltimore, Md.
- Electric Light Plants.** (Portable.)  
Schroeder Electric Co., Evansville, Ind.
- Electro-Magnet.** [See Magnet Electro.]
- Electric Vehicles.**  
General Vehicle Co., Long Island City, N. Y.
- Elevating, Conveying and Power Transmission Machinery.** [See also Conveying and Elevating Machinery and Power Transmission Mch.]
- Elevators.**  
American Electric Machine & Elevator Co., St. Louis, Mo.  
American Machine Co., Louisville, Ky.  
Atlas Machine Co., Louisville, Ky.  
Curran Elevator Co., James H., Cincinnati, O.  
Decatur Foundry, Furnace & Mach. Co., Decatur, Ind.  
Kansas City Elevator Mfg. Co., Kansas City, Mo.  
Miller Elevator Mfg. Co., Wm. A., St. Louis, Mo.  
Moffat Machinery Mfg. Co., Charlotte, N. C.  
Ohio Elevator & Machine Co., Columbus, O.  
Otis Elevator Co., New York, N. Y.  
Ridgway & Son Co., The, Coatesville, Pa.  
Speidel, J. G., Reading, Pa.  
Warsaw Elevator Co., Baltimore, Md.  
Westbrook Elevator Co., Danville, Va.
- Elevators.** (Automatic.)  
Mathews Gravity Carrier Co., Ellwood City, Pa.
- Elevators.** (Portable for Warehouses, etc.)  
Economy Elevator Co., Chicago, Ill.
- Elevator Bolts.**  
Upon Nut Co., The, Cleveland, O.
- Elevator Buckets.**  
Caldwell & Son Co., H. W., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Nictown (Philadelphia), Pa.
- Elevator Enclosures and Cabs.**  
Bolles Iron & Wire Works, J. E., Detroit, Mich.  
Cincinnati Mfg. Co., Cincinnati, O.  
Dow Wire & Iron Works, Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
Dufur, Baggett & Co., Baltimore, Md.  
Meyers Mfg. Co., The Fred J., Hamilton, O.  
Ohio Elevator & Machine Co., The, Columbus, O.  
Otis Elevator Co., New York, N. Y.
- Elevator Rope.** [See Wire Rope.]
- Elevator Safety Gates.**  
American Elec. Mch. & Elevator Co., St. Louis, Mo.  
Richmond Safety Gate Co., Richmond, Ind.
- Emery Wheels.** [See Grinding Wheels.]
- Engineers.**  
APPRAISAL  
Day & Zimmerman, Philadelphia, Pa.  
Ferree Co., The H. G., Memphis, Tenn.  
Houston-Kingsley Co., Memphis, Tenn.  
Maxcy, John Wharton, Houston, Tex.
- BLAST FURNACES  
Smythe Co., The S. R., Pittsburgh, Pa.
- CHEMICAL  
Crosby, Walter W., Baltimore, Md.  
Institute of Industrial Research, Washington, D. C.  
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
- CIVIL  
Arnold Co., The, Chicago, Ill.  
Blair & Drane, Charlotte, N. C.  
Brown & Clarkson, Washington, D. C.  
Bryant, Glaucus A., Wilson, N. O.  
Firth, Joseph, Charlotte, N. C.  
Freeman, Jr., Arthur C., Norfolk, Va.  
Knowles, Morris, Pittsburgh, Pa.  
Maynard-Carter, Chattanooga, Tenn.  
Moile, H. E., New York, N. Y.  
Potter, Alexander, New York, N. Y.  
Rucker, B. Parks, Chattanooga, Tenn.  
Shand Engineering Co., Columbia, S. C.  
Solomon-Norcross Co., Atlanta, Ga.  
Stevens, Harry, Washington, D. C.  
Waldo, W., Houston, Tex.  
Walker Engineering Corp., Tampa, Fla.  
White Companies, J. G., New York, N. Y.
- DAMS  
Boyd, Geo. R., Savannah, Ga.  
Quick, Alfred M., Baltimore, Md.  
Requarth Co., C. W., Charlotte, N. C.  
Spiker, William C., Atlanta, Ga.  
White Companies, J. G., New York, N. Y.
- DRAINAGE AND IRRIGATION  
Boyd, Geo. R., Savannah, Ga.  
Brown & Clarkson, Washington, D. C.  
Bryant, Glaucus A., Wilson, N. O.  
Cory-Harrison & Co., San Antonio, Tex.  
Cummings, F. N. (Taylor), Claremont, Va.  
Dabney Engineering Co., Memphis, Tenn.  
Ford, Bacon & Davis, New York, N. Y.  
Knowles, Morris, Pittsburgh, Pa.  
McCready Bros. & Cheves, Inc., Charleston, S. C.  
Perkins, Edmund T., Engineering Co., Chicago, Ill.  
Walker Engineering Corp., Tampa, Fla.  
Wright Engineering Co., San Antonio, Tex.
- EFFICIENCY  
Crosby, Walter W., Baltimore, Md.  
Institute of Industrial Research, Washington, D. C.  
Quick, Alfred M., Baltimore, Md.
- ELECTRICAL  
Arnold Co., The, Chicago, Ill.  
B. E. S. Engineering Co., Houston, Tex.  
Crocker-Wheeler Co., Amper, N. J.  
Keilholz, P. O., Baltimore, Md.  
Lerr-Morton Co., Columbus, Ga.  
Lido, Martin J., Birmingham, Ala.  
Moile, H. E., New York, N. Y.  
Rucker, B. Parks, Charlotte, N. C.  
Stone & Webster Engr. Corp., Boston, Mass.  
Tucker & Laxton, Charlotte, N. C.  
White, Gilbert O., Charlotte, N. C.  
Wilson-Maltman Electric Co., Baltimore, Md.
- ELECTRIC LIGHTS AND POWER PLANTS  
Dabney Engineering Co., Memphis, Tenn.  
Ford, Bacon & Davis, New York, N. Y.  
Fuller-Coutt Co., St. Louis, Mo.  
Graves Engineering Co., Inc., New York, N. Y.  
Gross Engineering Co., Jervis, D. C.  
Houston-Kingsley Co., Memphis, Tenn.  
Keilholz, P. O., Baltimore, Md.  
Lerr-Morton Co., Columbus, Ga.  
Schofield Engineering Co., Philadelphia, Pa.  
Stone & Webster Engr. Corp., Boston, Mass.  
Tait, Godfrey M. S., Washington, D. C.  
White Companies, J. G., New York, N. Y.  
White, Gilbert O., Charlotte, N. C.  
Wilson-Maltman Electric Co., Baltimore, Md.  
Wright Engineering Co., San Antonio, Tex.
- GAS  
Ford, Bacon & Davis, New York, N. Y.  
Tait, Godfrey M. S., Washington, D. C.
- GARBAGE DISPOSAL  
Baylis, John R., Birmingham, Ala.
- GEOLOGICAL  
Brown & Clarkson, Washington, D. C.  
Davis, Geo. O., Philadelphia, Pa.  
Froehling & Robertson, Richmond, Va.  
Grimmer, G. P., Martinsburg, W. Va.  
Institute of Industrial Research, Washington, D. C.  
Maynard-Carter, Chattanooga, Tenn.
- HEATING AND VENTILATING  
Crook-Kries & Co., Baltimore, Md.
- HYDRO-ELECTRIC  
Baylis, John R., Birmingham, Ala.  
Brown & Clarkson, Washington, D. C.  
Fuller-Coutt Co., St. Louis, Mo.  
Howe, Charles F., Macon, Ga.  
Knowles, Morris, Pittsburgh, Pa.  
Maxcy, John Wharton, Houston, Tex.  
Quick, Alfred M., Baltimore, Md.  
Requarth Co., C. W., Charlotte, N. C.  
Rucker, B. Parks, Charlotte, N. C.  
Schofield Engineering Co., Philadelphia, Pa.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.  
Solomon-Norcross Co., Atlanta, Ga.  
Spiker, William C., Atlanta, Ga.  
Tucker & Laxton, Charlotte, N. C.  
White Companies, J. G., New York, N. Y.
- ICE AND REFRIGERATING  
B. E. S. Engineering Co., Houston, Tex.  
Wright Engineering Co., San Antonio, Tex.
- INDUSTRIAL PLANT  
Day & Zimmerman, Philadelphia, Pa.  
Ferree Co., The H. G., Memphis, Tenn.  
Grimmer, Harry L., Boston, Mass.  
Guarantee Construction Co., New York, N. Y.  
Institute of Industrial Research, Washington, D. C.  
Kent, Robert S., Brooklyn, N. Y.  
Rucker, B. Parks, Charlotte, N. C.  
Schofield Engineering Co., Philadelphia, Pa.  
Shearer, C. E., Memphis, Tenn.  
Steinmetz, C. M., Washington, D. C.  
Stone & Webster Engr. Corp., Boston, Mass.  
Stevens, Harry, Washington, D. C.  
Summers & Co., L. L., Chicago, Ill.  
White Companies, J. G., New York, N. Y.  
Wilson-Maltman Electric Co., Baltimore, Md.
- INSPECTIONS AND TESTS  
Blair & Drane, Charlotte, N. C.  
Crosby, Walter W., Baltimore, Md.  
Froehling & Robertson, Richmond, Va.  
Hill, Nicholas S., Jr., New York, N. Y.  
Hunt & Co., Robert W., Chicago, Ill.  
Institute of Industrial Research, Washington, D. C.  
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
- LANDSCAPE  
Berkmans Co., P. J., Augusta, Ga.  
Blair & Drane, Charlotte, N. C.  
Crosby, Walter W., Baltimore, Md.  
Cummings, F. N. (Taylor), Claremont, Va.
- LIGHTING  
Ford, Bacon & Davis, New York, N. Y.  
Fuller-Coutt Co., St. Louis, Mo.  
McCready Bros. & Cheves, Inc., Charleston, S. C.  
Rucker, B. Parks, Charlotte, N. C.
- LUMBER PLANTS  
Steinmetz, C. M., Washington, D. C.

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## Engineers.

**MECHANICAL.**  
Arnold Co., The, Chicago, Ill.  
Groak, Irwin D., Chicago, Ill.  
Kent Robert S., Brooklyn, N. Y.  
Lide, Martin J., Birmingham, Ala.  
Steinmetz, C. M., Washington, D. C.  
Stevens, Harry, Washington, D. C.  
Tucker & Laxton, Charlotte, N. C.

## Mining.

Brown & Clarkson, Washington, D. C.  
Grimsley, G. P., Martinsburg, W. Va.  
Haney, Marshall, Bridgewater, Va.  
Jones, E. M., Chattanooga, Tenn.  
Maynard-Carter, Chattanooga, Tenn.

## Municipal.

Blair & Drane, Charlotte, N. C.  
Brown & Clarkson, Washington, D. C.  
Crosby, Walter W., Baltimore, Md.  
Cory-Harrison & Co., San Antonio, Texas.  
Dabney Engineering Co., Memphis, Tenn.  
Elrod, Henry E., Dallas, Texas.  
Firth, Joseph, Charlotte, N. C.  
Freeman, Jr., Arthur C., Norfolk, Va.  
Graves Engineering Co., New York, N. Y.  
Knowles, Morris, Pittsburgh, Pa.  
McCady Bros. & Cheves, Inc., Charleston, S. C.  
McCrady Co., J. B., Atlanta, Ga.  
Few, Arthur, Atlanta, Ga.  
Shand Engineering Co., Columbia, S. C.  
Walker Engineering Corp., Tampa, Fla.  
White, Gilbert C., Charlotte, N. C.

## Paving and Road.

Blair & Drane, Charlotte, N. C.  
Bryant, Glaucus A., Wilson, N. C.  
Crosby, Walter W., Baltimore, Md.  
Elrod, Henry E., Dallas, Texas.  
Firth, Joseph, Charlotte, N. C.  
Fuller-Coul Co., St. Louis, Mo.  
Institute of Industrial Research, Washington, D. C.  
McCady Bros. & Cheves, Inc., Charleston, S. C.  
Shand Engineering Co., Columbia, S. C.  
White, Gilbert C., Charlotte, N. C.

## Public Service Properties.

Day & Zimmerman, Philadelphia, Pa.  
Ferre Co., The H. G., Memphis, Tenn.  
Ford, Bacon & Davis, New York, N. Y.  
Gillman, Harry L., Boston, Mass.  
Graves Engineering Co., Inc., New York, N. Y.  
Maxey, John Wharton, Houston, Tex.  
Schofield Engineering Co., Philadelphia, Pa.  
Stone & Webster Engr. Corp., Boston, Mass.  
White Companies, J. G., New York, N. Y.

## Reinforced Concrete.

(Bridges, Buildings, etc.)  
Cauldwell-Wingate Co., Atlanta, Ga.  
Cummings, F. N. (Taylor), Claremont, Va.  
Foster-Creighton-Gould Co., Nashville, Tenn.  
Guarantee Construction Co., New York, N. Y.  
Luten, Daniel B., Indianapolis, Ind.  
Potter, Alexander, New York, N. Y.  
Requarth Co., C. W., Charlotte, N. C.  
Savannah Eng. & Construction Co., Savannah, Ga.  
Spiker, William C., Atlanta, Ga.  
Steinmetz, C. M., Washington, D. C.  
Tucker & Laxton, Charlotte, N. C.  
White Companies, J. G., New York, N. Y.

## River and Harbor.

Gillman, Harry L., Boston, Mass.

## Sewerage and Water-Works.

Bayle, John R., Birmingham, Ala.  
Blair & Drane, Charlotte, N. C.  
Brown & Clarkson, Washington, D. C.  
Bryant, Glaucus A., Wilson, N. C.  
Cory-Harrison & Co., San Antonio, Texas.  
Crock-Kries & Co., Baltimore, Md.  
Dabney Engineering Co., Memphis, Tenn.  
Firth, Joseph, Charlotte, N. C.  
Ford, Bacon & Davis, New York, N. Y.  
Freeman, Jr., Arthur C., Norfolk, Va.  
Graves Engineering Co., Inc., New York, N. Y.  
Hill, Jr., Nicholas S., New York, N. Y.  
Huston-Kingsley Co., Memphis, Tenn.  
Maxey, John Wharton, Houston, Tex.  
Mayer, J. H., Birmingham, Ala.  
Miller, Hiram Allen, Boston, Mass.  
Myers, E. W., Greensboro, N. C.  
Few, Arthur, Atlanta, Ga.  
Potter, Alexander, New York, N. Y.  
Quick, Alfred M., Baltimore, Md.  
Stevens, Harry, Washington, D. C.  
Walker Engineering Corp., Tampa, Fla.  
Washington Co., A. H., Charlotte, N. C.  
White Companies, J. G., New York, N. Y.  
White Gilbert C., Charlotte, N. C.  
Wright Engineering Co., San Antonio, Texas.

## Steel Work and Rolling Mills.

Smythe Co., The S. R., Pittsburgh, Pa.

## Structural Steel.

Foster-Creighton-Gould Co., Nashville, Tenn.  
Freeman, Jr., Arthur C., Norfolk, Va.  
Shoer, C. E., Memphis, Tenn.  
Solomon-Norcross Co., Atlanta, Ga.  
Spiker, William C., Atlanta, Ga.

## Theatre Construction.

Gatlin, W. R., Hopkinsville, Ky.

## Engines.

**COMPRESSED AIR.**  
Dake Engine Co., Grand Haven, Mich.

## Gas and Gasoline.

Affiliated Manufacturers Co., Milwaukee, Wis.  
Allis-Chalmers Manufacturing Co., Milwaukee, Wis.  
Cooper Co., C. & G., Mt. Vernon, Ohio.  
Gibbs Machine Co., Inc., Columbia, S. C.  
Heer Engine Co., Portsmouth, O.  
Mietz, A., New York, N. Y.  
Modern Equipment Co., Savannah, Ga.  
Otto Gas Engine Works, Philadelphia, Pa.  
Southern Engine & Boiler Works, Jackson, Tenn.  
Struthers-Wells Co., Warren, Pa.  
Van Dusen, Royce & Co., Columbus, O.  
Westinghouse Machine Co., The, Pittsburgh, Pa.

## Oil.

Bolinders Co., The, New York, N. Y.  
Fairbanks-Morse Co., The, New York, N. Y.  
Heer Engine Co., Portsmouth, Ohio.  
Mietz, A., New York, N. Y.  
Snow Steam Pump Works, The, New York, N. Y.

## Sinks.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.  
American Hoist & Derrick Co., St. Paul, Minn.  
Ball Engine Co., Erie, Pa.  
Buffalo Forge Co., Buffalo, N. Y.  
Cameron & Barkley Co., Charleston, S. C.  
Cooper Co., C. & G., Mt. Vernon, Ohio.  
Dake Engine Co., Grand Haven, Mich.  
Engberg Electric & Mechanical Works, St. Joseph, Mo.  
Erie City Iron Works, Erie, Pa.  
Farquhar Co., Ltd., A. B., York, Pa.  
Gibbs Machine Co., Inc., Columbus, S. C.  
Griffith & Wedge Co., The, Zanesville, O.  
Griscom-Russell Co., New York, N. Y.  
Harris Bros. Co., Chicago, Ill.  
Harrisburg, Fdy. & Mch. Wks., Harrisburg, Pa.  
Houston, Stanwood & Gamble Co., Cincinnati, O.  
Ide & Sons, A. L., Springfield, Ill.  
Laffel & Co., James, Springfield, O.  
Lombard Iron Works, Augusta, Ga.  
Mecklenburg Iron Works, Charlotte, N. C.  
Murray Iron Works Co., Burlington, Ia.  
Phoenix Iron Works Co., Meadville, Pa.  
Price Machinery Co., S. M., Norfolk, Va.  
Schofield Iron Works, Macon, Ga.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.  
Viter Mfg. Co., Milwaukee, Wis.  
Westinghouse Machine Co., Pittsburgh, Pa.

## Envelopes.

Young & Selden Co., Baltimore, Md.

## Excavating Machinery.

American Clay Machinery Co., The, Bucyrus, Ohio.  
American Locomotive Co., New York, N. Y.  
Byers Mach. Co., The John F., Ravenna, O.  
Fairbanks Steam Shovel Co., Marion, O.  
Gade Excavating Co., The, Iowa Falls, Iowa.  
Hayward Co., New York, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Lidgerwood Mfg. Co., New York, N. Y.  
Marion-Osgood Co., Marion, O.  
Marion Steam Shovel Co., Marion, O.  
Montgahan Machine Co., Chicago, Ill.  
Morris Machine Works, Baldwinville, N. Y.  
National Hoisting Engine Co., Harrison, N. J.  
Norborn Engineering Co., Philadelphia, Pa.  
Williams Co., The G. H., Cleveland, O.

## Excavators.

(Trench.)  
Austin Machinery Co., W. E., Atlanta, Ga.  
Fairbanks Steam Shovel Co., Marion, O.  
Gade Excavating Co., The, Iowa Falls, Iowa.  
Hayward Co., The, New York, N. Y.  
Montgahan Machine Co., Chicago, Ill.

## Excelsior Machinery.

Kline, Lewis T., Alpena, Mich.

## Exhaust Heads.

Abendroth & Root Mfg. Co., Newburgh, N. Y.  
American Spiral Pipe Works, Chicago, Ill.

## Exhibits.

(Machinery Builders' Equipment and Supplies.)  
Builders' Exchange, Baltimore, Md.

## Expansion Joints.

Badger & Sons Co., E. B., Boston, Mass.

## Expanded Metal.

[See Lath.]

## Explosives.

Atlas Powder Co., Wilmington, Del.  
Du Pont de Nemours Powder Co., E. I., Wilmington, Del.  
Jefferson Powder Co., Birmingham, Ala.  
Keystone Nat'l. Powder Co., Emporium, Pa.

## Factory Sites.

(Town and Railroad.) [See Industrial, Agricultural and Commercial Opportunities.]

## Fans.

(Electric.)  
General Electric Co., Schenectady, N. Y.  
Robbins & Myers Co., Springfield, O.

## Fans.

(Ventilating.) [See Blowers, Exhaust Fans.]

## Fastener Driving Machine.

(Corrugated Joint.)  
Saranac Machine Co., Benton Harbor, Mich.

## Feed-Water Heaters and Purifiers.

American Water Softener Co., Philadelphia, Pa.  
Blake & Knowles Steam Pump Works, East Cambridge, Mass.  
Erie City Iron Works, Erie, Pa.  
Griscom-Russell Co., New York, N. Y.  
Murray Iron Works Co., Burlington, Ia.  
National Pipe Bending Co., New Haven, Conn.  
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.  
Stewart Heater Co., Buffalo, N. Y.

## Feed-Water Heater and Purifier and Oil Separator Combined.

Blake & Knowles Steam Pump Works, East Cambridge, Mass.

## Felt.

(Building, Sheathing.)  
Barrett Mfg. Co., Philadelphia, Pa.

## Fencing, Entrance Gates.

(Iron Steel Wire.)  
American Steel & Wire Co., Chicago, Ill.  
Bolles Iron & Wire Wks., J. E., Detroit, Mich.  
Dow Wire & Iron Works, Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
New Jersey Wire Cloth Co., Trenton, N. J.  
Ohio Elevator & Mch. Co., The, Columbus, O.

## Fertilizer Machy.

[See also Phosphate Mch.]  
Smith Co., T. L., Atlanta, Ga.  
Stedman's Foundry & Machine Works, Aurora, Ind.  
Valk & Murdoch Iron Works, Charleston, S. C.

## Fibre.

(Vulcanized.)  
Continental Fibre Co., Newark, Del.

## Files.

Barnett Co., G. & H., Philadelphia, Pa.  
Nicholson File Co., Providence, R. I.

## Filters.

(Water for Domestic and Industrial Purposes.)  
American Water Softener Co., Philadelphia, Pa.  
International Filter Co., Chicago, Ill.  
Lynn-Superior Co., The, Cincinnati, O.  
New York Cond. Jewell Fil. Co., New York, N. Y.

## Fire Alarm.

[See Brick, Fire.]

## Fire Door Fixtures.

Richmond Safety Gate Co., Richmond, Ind.  
Victor Mfg. Co., Newburyport, Mass.

## Fire Extinguishers.

Badger & Sons Co., E. B., Boston, Mass.

## Fire Escapes.

Bolles Iron & Wire Works, J. E., Detroit, Mich.  
Cheapeake Iron Works, Baltimore, Md.

## Fire Places.

(Brick and Tile.)  
Hood Brick Co., B. Miffin, Atlanta, Ga.

## Fire Sprinkling Systems.

Globe Automatic Sprinkler Co., Cincinnati, O.

## Fireproof Building Construction.

[See Concrete Construction.]

## Fireproof Building Material.

Bannon Pipe Co., P., Louisville, Ky.  
Johns-Manville Co., H. W., New York, N. Y.

## Fireproof Doors and Shutters.

Kearney Mfg. Co., Columbus, O.  
Richmond Safety Gate Co., Richmond, Ind.  
Victor Mfg. Co., Newburyport, Mass.

## Fireproof Windows.

[See Window Frames and Sashes (Fireproof).]

## Fittings.

(Wire Rope.)  
Waterbury Co., New York, N. Y.

## Fireproofing.

(Brick and Tile.)  
Hood Brick Co., B. Miffin, Atlanta, Ga.

## Fixtures.

(Electric Lighting.)  
Hill & Co., Walter E., Baltimore, Md.  
Wilson-Maitman Electric Co., Baltimore, Md.

## Flanges.

(Iron and Steel.)  
American Cast Iron Pipe Co., Birmingham, Ala.  
American Pipe & Construction Co., Phila., Pa.  
American Spiral Pipe Works, Chicago, Ill.  
Dart Mfg. Co., E. M., Providence, R. I.  
Glanorgan Pipe & Foundry Co., Lynchburg, Va.  
National Tube Co., Pittsburgh, Pa.  
U. S. Cast Iron Pipe & Fdy. Co., Burlington, N. J.  
Wood & Co., R. D., Philadelphia, Pa.

## Flat Wire.

American Steel & Wire Co., Chicago, Ill.

## Flexible Joints.

Moran Flex. Steam Joint Co., Inc., Louisville, Ky.

## Floor Tiles.

Northcross Mantel Co., W. J., Memphis, Tenn.

## Flooring.

(Creosoted Block.)  
Republic Creosoting Co., Indianapolis, Ind.

## Flooring.

(Hardwood, Maple, Oak.)  
Nashville Hardw'd Flooring Co., Nashville, Tenn.  
Whiting, William S., Asheville, N. C.

## Flour and Grist Mill Machinery and Supplies.

Caldwell & Sons Co., H. W., Chicago, Ill.  
Nordyke & Marmion Co., Indianapolis, Ind.  
Salem Foundry & Machine Works, Salem, Va.  
Starr Co., B. F., Baltimore, Md.  
Wolf Co., Chambersburg, Pa.

## Flue Lining.

Southern Sewer Pipe Co., Birmingham, Ala.

## Forges.

Buffalo Forge Co., Buffalo, N. Y.

## Forgings.

Philadelphia Steel & Forge Co., New York, N. Y.  
Weimer Chain & Iron Co., Lebanon, Pa.

## Foundations.

(Waterproof.)  
Requarth Co., C. W., Charlotte, N. C.

## Foundry Equipment and Supplies.

Newport Sand Bank Co., Inc., Newport, Ky.  
Paxson Co., J. W., Philadelphia, Pa.

## Foundry Facings.

(Talc and Soapstone.)  
Georgia Talc Co., Asheville, N. C.

## Foundry and Machine Shops.

Earle Gear & Machine Co., Philadelphia, Pa.  
Glanorgan Pipe & Foundry Co., Lynchburg, Va.  
Goldens Foundry & Machine Wks., Columbus, Ga.  
Harrisburg Fdy. & Mch. Wks., Harrisburg, Pa.  
Lombard Iron Works, Augusta, Ga.  
Poele Eng. & Mch. Co., Baltimore, Md.  
Titus, E. E., Petersburg, Va.  
Valk & Murdoch Iron Works, Charleston, S. C.

## Frogs.

[See Railroad Frogs and Switches.]

## Fuel Economizer.

Green Fuel Economizer Co., Matteawan, N. Y.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.

## Fuel Oil.

Gulf Refining Co., Pittsburgh, Pa.  
U. S. Asphalt Refining Co., New York, N. Y.

## Furnaces.

(For Industrial Purposes.)  
Smythe Co., The S. R., Pittsburgh, Pa.

## Fuses.

(Electrical.)  
Economy Fuse & Mfg. Co., Chicago, Ill.

## Fuse Shells.

(Renewable.)  
Economy Fuse & Mfg. Co., Chicago, Ill.

## Fuses, Bases and Fittings.

Johns-Manville Co., H. W., New York, N. Y.

## Galvanized Steel and Iron.

American Sheet & Tin Plate Co., Pittsburgh, Pa.  
La Belle Iron Works, Steubenville, O.  
McCalla, Inc., Harold, Philadelphia, Pa.  
Westinghouse Machine Co., Pittsburgh, Pa.  
Wood Iron & Steel Co., Allentown, Pa.  
Youngstown Sheet & Tube Co., Youngstown, O.

## Garage and House.

(Portable.)  
Dixie Culvert & Metal Co., Atlanta, Ga.

## Gas Blowers.

(Turbine.)  
Terry Steam Turbine Co., Hartford, Conn.

## Gas Engines.

[See Engines, Gas.]

## Gas Machines.

Kemp Mfg. Co., C. M., Baltimore, Md.  
Milburn Co., Alex. N., Baltimore, Md.

## Gas Plants.

Power & Mining Machinery Co., Cudahy, W.  
Western Gas Construction Co., Ft. Wayne, Ind.

## Gas Producers.

Otto Gas Engine Works, Philadelphia, Pa.  
Smythe Co., The S. R., Pittsburgh, Pa.  
Westinghouse Machine Co., Pittsburgh, Pa.  
Wood & Co., R. D., Philadelphia, Pa.

## Gasoline and Kerosene.

Gulf Refining Co., Pittsburgh, Pa.

## Gas and Steam Fitters' Tools.

Saunders' Sons, D., Yonkers, N. Y.

## Gears.

American Die & Tool Co., Reading, Pa.  
Caldwell & Sons Co., H. W., Chicago, Ill.  
Crescon-Morris Co., Philadelphia, Pa.  
Earle Gear & Machine Co., The, Philadelphia, Pa.  
Edgemont Machine Co., Dayton, O.  
James Mfg. Co., D. O., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, O.  
Poele Engineering & Machine Co., Baltimore, Md.

## Generators.

(Hot Water.)  
Griscom-Russell Co., New York, N. Y.

## Generating Sets.

Engberg Electric & Mechanical Works, St. Joseph, Mo.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.  
Triumph Electric Co., Cincinnati, O.

## Geologists.

Davis, Geo. C., Phila., Pa.  
Froehling & Robertson, Richmond, Va.  
Grimsley, G. P., Martinsburg, W. Va.  
Maynard-Carter, Chattanooga, Tenn.

## Glass.

(Plate, etc.)  
Binswanger & Co., Memphis, Tenn.

## Governors.

(Steam Engine.)  
Pickering Governor Co., Portland, Conn.

## Grain Elevator Supplies.

Caldwell & Sons Co., H. W., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Nicetown (Philadelphia), Pa.

## Granite.

Southern Marble & Granite Co., Spartansburg, S. C.

## Graphite.

Dixon Crucible Co., Joseph, Jersey City, N. J.

## Grates and Grate Bars.

Huber Grate Bar & Stoking Co., Baltimore, Md.  
Thomas Grate Bar Co., Birmingham, Ala.

## Gravel.

Arundel Sand & Gravel Co., Baltimore, Md.

## Gravel.

(Roofing and Road.)  
American Ballast Co., Knoxville, Tenn.

## Gravity Spiral Chutes.

Mathews Gravity Carrier Co., Ellwood City, Pa.

## Grease.

Albany Lubricating Co., New York, N. Y.  
Lunkenheimer Co., The, Cincinnati, O.

## Greases and Lubricating Compounds.

Albany Lubricating Co., New York, N. Y.  
Galena Signal Oil Co., Franklin, Pa.  
Robinson & Son Co., Wm. O., Baltimore, Md.

## Grinders.

(Gypsum, Limestone, etc.)  
Stedman's Foundry & Machine Wks., Aurora, Ind.

## Grinding Wheels.

Carborundum Co., Niagara Falls, N. Y.  
Vitrified Wheel Co., Westfield, Mass.

## Groovers.

Hother Bros. Saw Mfg. Co., Inc., Rochester, N. Y.

## Gunpowder.

Atlas Powder Co., Wilmington, Del.  
Du Pont de Nemours Powder Co., E. I., Wilmington, Del.  
Jefferson Powder Co., Birmingham, Ala.  
Keystone National Powder Co., Emporium, Pa.

## Hammers.

(Steam, Power, Pneumatic.)  
Independent Pneumatic Tool Co., Chicago, Ill.

## Handle Machinery.

[See Woodworking Machinery.]

## Hangers.

[See Pulleys, Shafting and Hangers.]

## Hay Tools.

Myers & Bro., F. E., Ashland, .

## Heater.

(Asphalt.)  
Cummer & Son Co., F. D., The, Cleveland, Ohio.

## Heating Apparatus, Engineers and Contractors.

American Blower Co., Detroit, Mich.  
Buffalo Steam Pump Co., Buffalo, N. Y.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.

## Heating and Ventilating.

Crock



**Industrial Track Work.** [See Railways, Ind.]**Injectors.**

Jenkins Bros., New York, N. Y.  
Lankenheimer Co., The, Cincinnati, O.  
Sellers & Co., Inc., Wm., Philadelphia, Pa.

**Insulated Wires and Cables.**

Safety Insulated Wire & Cable Co., New York, N. Y.

**Insulating Materials.**

Continental Fibre Co., Newark, Del.  
General Electric Co., Schenectady, N. Y.  
Johns-Manville Co., H. W., New York, N. Y.

**Insulating. (Tape.)**

Standard Paint Co., New York, N. Y.

**Insulating. (Varnishes and Compounds.)**

Standard Paint Co., New York, N. Y.

**Iron.**

La Belle Iron Works, Stenbenville, O.  
Lebanon Valley Iron & Steel Co., Lebanon, Pa.  
Milton Mfg. Co., M. H., Pa.  
Republic Iron & Steel Co., Youngstown, O.  
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
Wood Iron & Steel Co., Alan, Philadelphia, Pa.

**Irrigation Machinery.**

Cameron Steam Pump Wks., A. S. New York, N. Y.

**Investment Securities.**

Brad, Elliott & Harrison, Cincinnati, O.  
Provident Savings Bank & Trust Co., Cincinnati, Ohio.

**Jobbers. (Electrical.)**

Carroll Electrical Co., Washington, D. C.

**Kettles. (Steam Jacket.)**

Badger & Sons Co., E. R., Boston, Mass.

**Key Seater. (Portable.)**

Burr & Son, John T., Brooklyn, N. Y.

**Knitting Machinery.**

Acme Knitting Mch. & Needle Co., Franklin, N. H.

**Lamps. (Arc and Incandescent.)**

General Electric Co., Schenectady, N. Y.  
Goetting & Mathiesen Co., New York, N. Y.  
Lee Electric Co., Baltimore, Md.  
Piedmont Electric Co., Asheville, N. C.  
Westinghouse Lamp Co., New York, N. Y.

**Lamps. (Carbon and Tungsten.)**

Newman Electric Lamp Co., Cincinnati, O.

**Lamp Posts. (Electric, Gas.)**

Union Foundry Co., Anniston, Ala.  
Western Gas Construction Co., Ft. Wayne, Ind.  
Withers Fdry. & Mach. Works, Atlanta, Ga.

**Lamp Standards. (Ornamental Iron.)**

Union Foundry Co., Anniston, Ala.  
Withers Foundry & Machine Works, Atlanta, Ga.

**Lands. (Mineral, Timber, Farm, etc.) [See Industrial, Agricultural and Commercial Opportunities.]****Landscape Architects. (See Engineers.) [Landscape.]****Lath. (Expanded Metal.)**

Aronson Co., L. Columbia, S. C.  
Milwaukee Artistic Metal Ceiling Co., Milwaukee, Wis.

**Lathes. (Engine.)**

Greaves, Klusman Tool Co., The, Cincinnati, O.

**Lawn Furniture. (Wire.)**

Bolles Iron & Wire Works, J. E., Detroit, Mich.  
Dufur & Co., Baltimore, Md.

**Leadite.**

Leadite Co., Inc., The, Philadelphia, Pa.

**Light Plants.**

Carlisle & Finch Co., The, Cincinnati, Ohio.

**Lights. (Portable Acetylene.)**

Milburn Co., Alex. N., Baltimore, Md.

**Lime. (Hydrated.)**

Kentucky Portland Cement & Coal Co., Louisville, Ky.

**Limestone Products.**

Kentucky Portland Cement & Coal Co., Louisville, Ky.  
Security Cement & Lime Co., Hagerstown, Md.

**Liquor Filters.**

International Filter Co., Chicago, Ill.

**Lithographers, Engravers.**

Young & Selden Co., Baltimore, Md.

**Lockers. (Metal.)**

Bernstein Mfg. Co., Phila., Pa.  
Kelley Metal Ceiling Mfg. Co., S., Pittsburgh, Pa.

**Locomotives.**

**INDUSTRIAL.**  
American Locomotive Co., New York, N. Y.  
Baldwin Locomotive Wks., The, Philadelphia, Pa.  
Curtis, Geo. H., Cincinnati, O.  
Davenport Locomotive Works, Davenport, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Lima Locomotive Corporation, Lima, O.  
Porter Co., H. K., Pittsburgh, Pa.  
Southern Iron & Equipment Co., Atlanta, Ga.  
**RAILWAY.**  
American Locomotive Co., New York, N. Y.  
Baldwin Locomotive Wks., The, Philadelphia, Pa.  
Lima Locomotive Corporation, Lima, O.  
Porter Co., H. K., Pittsburgh, Pa.

**Log Dumping Device.**

Chase Turbine Mfg. Co., Orange, Mass.

**Looms and Weaving Machinery.**

Draper Co., Hopedale, Mass.  
Mason Machine Works, Taunton, Mass.  
Saco-Lowell Shops, Boston, Mass.

**Loom Harness.**

American Supply Co., Providence, R. I.

**Lubricants.**

Albany Lubricating Co., New York, N. Y.

**Lubricants. (Graphite.)**

Dixon Crucible Co., Joseph, Jersey City, N. J.

**Lumber.**

Industrial Lumber Co., Elizabeth, La.

**Lumber. (Cresosote.)**

American Cresosote Works, New Orleans, La.

**Lumber. (Heavy Construction, Pitch Pine, etc.)**

Industrial Lumber Co., Elizabeth, La.  
National Lumber & Cresosot. Co., Texarkana, Ark.

**Lumber Buggies.**

Soule Steam Feed Works - Meridian, Miss.

**Lumber Stackers.**

Soule Steam Feed Works, Meridian, Miss.

**Machinery. (Special.)**

Bliss Co., E. W., Brooklyn, N. Y.  
Kline, Lewis T., Alpena, Mich.  
Universal Machine Co., Baltimore, Md.

**Machinery and Supplies. (New and Second-Hand Bargains.)**

Assets Purchasing Co., Wheeling, W. Va.  
Casey Machinery Co., D. L., Springfield, O.  
Champion Fibre Co., Canton, N. C.  
Cleveland Belling & Machinery Co., Cleveland, O.  
Consolidated Iron & Metal Co., Chattanooga, Tenn.  
Contractors' Service Co., New York, N. Y.  
Duxett & Son, New York, N. Y.  
Harris Bros. Co., Chicago, Ill.  
Hilmer's Sons Co., Henry A., Philadelphia, Pa.  
Hyde Bros. Steel & Rail Co., Pittsburgh, Pa.  
Lehman, Charles T., Birmingham, Ala.  
Lodge & Shipley Mach. Tool Co., Cincinnati, O.  
Marine Metal & Supply Co., New York, N. Y.  
Nuesbaum & Co., V. M., Fort Wayne, Ind.  
Pannmuller Engineering Co., Chicago, Ill.  
Pipe & Contractors' Supply Co., New York, N. Y.  
Power Equipment Co., New York, N. Y.  
Prentiss Tool & Supply Co., New York, N. Y.  
Radio Machinery Co., Cincinnati, O.  
Read Co., Howard W., Philadelphia, Pa.  
Sachsenmaier & Co., George, Philadelphia, Pa.  
Samuel, Frank, Philadelphia, Pa.  
Seyfert's Sons, Inc., L. F., Philadelphia, Pa.  
South Side Fdry. & Mch. Co., Charleston, W. Va.  
Southern Mch. & Equipment Co., Lynchburg, Va.  
Sterling Machinery Co., New York, N. Y.  
Tampa Machinery Exchange, Tampa, Fla.  
Texas Supply Co., Beaumont, Tex.  
Thomsonville Iron Works, Thomasville, Ga.  
Toomey, Frank, Inc., Philadelphia, Pa.  
Wayne Machinery Co., Fort Wayne, Ind.  
Wilson Machy. Co., Harold R., St. Louis, Mo.  
Winterer Co., Herman L., Philadelphia, Pa.

**Machine Tools.**

Greaves, Klusman Tool Co., The, Cincinnati, O.

**Machinists. (Engineers.)**

Savannah Iron Works, Savannah, Ga.  
Universal Machine Co., Baltimore, Md.

**Magnesite Materials.**

Johns-Manville Co., H. W., New York, N. Y.

**Magnetic Separators.**

Paxson Co., J. W., Philadelphia, Pa.

**Mail Chutes.**

Cutler Mail Chute Co., Rochester, N. Y.

**Mantels. (Tile.)**

Northcross Mantel Co., W. J., Memphis, Tenn.

**Mantels. (Wooden.)**

Northcross Mantel Co., W. J., Memphis, Tenn.

**Mechanical Draft.**

Buffalo Forge Co., Buffalo, N. Y.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.

**Metal Ceilings. [See Ceilings, Metal.]****Metaline.**

Metaline Co., Long Island City, N. Y.

**Metal. (For Tanks, Culverts, Roofing, etc.)**

Portsmouth Steel Co., Portsmouth, O.

**Metal Corner Bead.**

Penn Metal Co., Boston, Mass.

**Metal Culverts. [See Culverts.] (Corrugated Metal.)****Metal Shingles. [See Shingles.] (Metal.)****Metal Stamping.**

Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.

**Metal Window Frames and Sash. [See Window Frames and Sash.] (Fireproof.)****Metal Work. [See Sheet Metal Work.]****Metal-Working Machinery. (Sheet.)**

Bertch & Co., Cambridge City, Ind.

**Meters. (Water.)**

Alberger Pump & Condenser Co., New York, N. Y.

**Meter Boxes, Couplings, Gauges. (Water.)**

Clark Co., H. W., Mattoon, Ill.

**Micrometers, Calipers, etc.**

Starrett Co., L. S., Athol, Mass.

**Milk Filters. (Liquor, Milk, etc.)**

International Filter Co., Chicago, Ill.

**Mill Engineers and Architects.**

O'Brian, W. C., Memphis, Tenn.

**Mill Supplies.**

Bailey-Libby Co., Charleston, S. C.  
Cameron & Barkley Co., Charleston, S. C.  
Gainesville Iron Works, Gainesville, Ga.  
Lombard Iron Works, Augusta, Ga.  
Lunkenheimer Co., The, Cincinnati, O.  
Mecklenburg Iron Works, Charlotte, N. C.  
Nordyke & Marmon Co., Indianapolis, Ind.  
Salem Foundry & Machine Wks., Salem, Va.  
Sawyer Co., B. F., Baltimore, Md.  
Wolf Co., Chambersburg, Pa.

**Mining Machinery. (Gold, Copper, Plate, etc.)**

Bartlett & Snow Co., C. O., Cleveland, O.  
Jeffrey Mfg. Co., Columbus, O.  
McLannahan-Stone Mach. Co., Hollidaysburg, Pa.  
Mecklenburg Iron Works, Charlotte, N. C.  
Raymond Bros. Impact Pulv. Co., Chicago, Ill.

**Mixers. (Concrete.)**

Atlas Engineering Co., Milwaukee, Wis.

**Mixing Machinery.**

Dunning, W. D., Syracuse, N. Y.

**Mortar Colors.**

Chattanooga Paint Co., Chattanooga, Tenn.

**Motor Trucks. (Electric.)**

General Vehicle Co., Long Island City, N. Y.

**Motor Trucks. (Gasoline.)**

White Co., The, Cleveland, O.

**Motor Trucks. (Second Hand.)**

Mar-Dei Mobile Co., Baltimore, Md.

**Music Wire.**

American Steel & Wire Co., Chicago, Ill.

**Music Wire.**

Waterbury Co., The, New York, N. Y.

**Nails. (Out.)**

La Belle Iron Works, Stenbenville, O.

**Nails and Spikes.**

American Steel & Wire Co., Chicago, Ill.  
La Belle Iron Works, Stenbenville, Ohio.  
Lebanon Valley Iron & Steel Co., Lebanon, Pa.  
Republic Iron & Steel Co., Youngstown, O.  
Youngstown Sheet & Tube Co., Youngstown, O.

**Nuts. [See Bolts, Nuts, Rivets, etc.]****Oil. (Cresosote.)**

Barrett Mfg. Co., Philadelphia, Pa.

**Oils. (Lubricating, Etc.)**

Albany Lubricating Co., New York, N. Y.  
Galena Signal Oil Co., Franklin, Pa.  
Gulf Refining Co., Pittsburgh, Pa.  
Robinson & Son Co., Wm. C., Baltimore, Md.

**Oil Cans.**

Wall Mfg. Supply Co., P., Allegheny, Pa.

**Oil Engines. [See Engines (Oil).]****Oil Separators.**

Stewart Heater Co., Buffalo, N. Y.

**Oil Well Machinery.**

Keystone Steam Well Mach. Co., Beaver Falls, Pa.

**Oil Well Tubing and Casing.**

Byers Co., A. M., Pittsburgh, Pa.

**Ore Handling Machinery. [See Coal Handling Machinery.]****Ornamental Iron Works.**

Bolles Iron & Wire Wks., J. E., Detroit, Mich.  
Chesapeake Iron Works, Baltimore, Md.  
Cincinnati Mfg. Co., Cincinnati, O.  
Dow Wire & Iron Works, Louisville, Ky.  
Ohio Elevator & Mach. Co., The, Columbus, O.  
Scriber & Sons Co., The L., Cincinnati, O.  
Snead Architectural Iron Works, Louisville, Ky.

**Ovens. (Core Baking, Lacquering, etc.)**

Oven Equipment & Mfg. Co., The, New Haven, Conn.

**Oxygen.**

International Oxygen Co., New York, N. Y.

**Oxygen Generators.**

International Oxygen Co., New York, N. Y.

**Oxy-Acetylene Welding and Cutting Outfit and Supplies.**

International Oxygen Co., New York, N. Y.

**Packing. (Asbestos, Metallic, Rubber, Leather, etc.)**

Goodyear Tire & Rubber Co., Akron, Ohio.  
Jenkins Bros., New York, N. Y.  
Johns-Manville Co., H. W., New York, N. Y.  
Power Special Co., New York, N. Y.  
United Lead Co., New York, N. Y.

**Packing. (Lead Wool.)**

United Lead Co., New York, N. Y.

**Paint. (Cement Floors, Masonry, Stucco, etc.)**

Standard Paint Co., New York, N. Y.

**Paint. (Metal Surfaces.)**

Dixon Crucible Co., Joseph, Jersey City, N. J.

**Paint. (Roofing, Building, etc.)**

Standard Paint Co., The, New York, N. Y.

**Paint-Making Machinery.**

Lynn-Superior Co., The, Cincinnati, O.

**Paper. (Roofing, Building, Sheeting, etc.)**

Barrett Mfg. Co., Philadelphia, Pa.

**Patents and Inventions.**

Russell Machine Co., F. K., Dallas, Tex.

**Patent Attorneys.**

Brown, Eugene C., Washington, D. C.

Chandler & Chandler, Washington, D. C.

Coleman, Watson E., Washington, D. C.

Duffie & Co., John S., Washington, D. C.

Evans & Co., Victor J., Washington, D. C.

FitzGerald & Co., W. T., Washington, D. C.

Hill, H. S., Washington, D. C.

Hodges, Vernon E., Washington, D. C.

Jenner, Herbert, Washington, D. C.

Lacey, R. S. & A. B., Washington, D. C.

**Paving Filler.**

Barrett Mfg. Co., Philadelphia, Pa.

**Paving Contractors.**

Dolarway Paving Co., New York, N. Y.

West Construction Co., The, Chattanooga, Tenn.

**Paving Blocks. (Cresosoted.)**

International Cresosoting & Construction Co., Galveston, Tex.

National Lumber & Cresosot. Co., Texarkana, Ark.

Republic Cresosoting Co., Indianapolis, Ind.

Southern Cresosoting Co., Ltd., Sileid, La.

Southern Wood Preserving Co., Atlanta, Ga.

U. S. Wood Preserving Co., New York, N. Y.

Wyckoff Pipe & Cresosoting Co., Inc., The, New York, N. Y.

**Paving Blocks. (Granite.)**

Southern Marble & Granite Co., The, Spartanburg, S. C.

**Paving Brick.**

Carlyle Paving Brick Co., Portsmouth, O.

Copeland-Ingis Shale Brick Co., Birm'gh'm, Ala.

Dunn Wire-Cut-Lug Brick Co., Conneaut, Ohio

Standard Brick Co., Macon, Ga.

**Paving Machines. (Bituminous Materials.)**

Smith Co., T. L., Atlanta, Ga.

**Paving Systems. (Concrete.)**

Dolarway Paving Co., New York, N. Y.

**Perforated Metal.**

Caldwell & Son, H. W., Chicago, Ill.

Erdie Perforating Co., Rochester, N. Y.

Hendricks Mfg. Co., The, Carbondale, Pa.

Manhattan Perforated Metal Co., New York, N. Y.

Mundt & Sons, Charles, Jersey City, N. J.

**Petroleum Refiners.**

Gulf Refining Co., Pittsburgh, Pa.

Standard Oil Co., Inc., Newark, N. J.

**Phosphate Machinery.**

Aising Engineering Co., J. R., New York, N. Y.

American Process Co., New York, N. Y.

Bailey-Libby Co., The, Charleston, S. C.

# CLASSIFIED INDEX OF ADVERTISEMENTS.

## Presses. (Stamping.)

Bliss Co., E. W., Brooklyn, N. Y.

## Printers. (Book, Catalog, Job, etc.)

Fleet-McGinley Co., Baltimore, Md.

## Promoters.

Electric Bond & Share Co., New York, N. Y.

## Pulleys. (Friction Clutch.)

Caldwell & Son Co., H. W., Chicago, Ill.  
Cresson-Morris Co., Philadelphia, Pa.  
Edgerton Machine Co., Dayton, O.  
Medart Patent Pulley Co., St. Louis, Mo.  
Poele Engineering & Mach. Co., Baltimore, Md.  
Wood's Sons Co., T. B., Chambersburg, Pa.

## Pulleys. (Steel Rim.)

Medart Patent Pulley Co., St. Louis, Mo.

## Pulleys. (Wood Split.)

Caldwell & Son Co., H. W., Chicago, Ill.  
Lane Mfg. Co., Montpelier, Vt.  
Medart Patent Pulley Co., St. Louis, Mo.  
Reeves Pulley Co., Columbus, Ind.  
Saginaw Mfg. Co., Saginaw, Mich.  
Salem Foundry & Machine Wks., Salem, Va.

## Pulleys, Shafting and Hangers.

Caldwell & Son Co., H. W., Chicago, Ill.  
Cresson-Morris Co., Philadelphia, Pa.  
Dodge Manufacturing Co., Milwaukee, Ind.  
Golden's Foundry & Mach. Co., Columbus, Ga.  
Jeffrey Mfg. Co., Columbus, O.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
Lane Mfg. Co., Montpelier, Vt.  
Link-Belt Co., Nictown (Philadelphia), Pa.  
Medart Patent Pulley Co., St. Louis, Mo.  
Nortyke & Marmon Co., Indianapolis, Ind.  
Poele Engineering & Mach. Co., Baltimore, Md.  
Wood's Sons Co., T. B., Chambersburg, Pa.

## Pulverizers.

Alsing Engineering Co., J. R., New York, N. Y.  
Austin Mfg. Co., Chicago, Ill.  
Grundenier Pat. Crusher & Pulv. Co., St. Louis, Missouri.

## Pumps. (Air.)

Jeffrey Mfg. Co., Columbus, O.  
McLanahan-Stone Mach. Co., Hollidaysburg, Pa.  
Raymond Bros., Impact Pulv. Co., Chicago, Ill.  
Siedman's Foundry & Machine Wks., Aurora, Ind.  
Western Wheeled Scraper Co., Aurora, Ill.

## Pumping Machinery.

Affiliated Manufacturers Co., Milwaukee, Wis.  
Alberger Pump & Condenser Co., New York, N. Y.  
Cameron Steam Pump Wks., A. S., New York, N. Y.  
Cook Well Co., The, St. Louis, Mo.  
Dean Bros. Steam Pump Wks., Indianapolis, Ind.  
Deane Steam Pump Co., Holyoke, Mass.  
Erie Pump & Engine Works, Erie, Pa.  
Goulds Mfg. Co., Seneca Falls, N. Y.  
Keystone Pump & Well Engine Co., Beaver Falls, Pa.  
Moffatt Machinery Mfg. Co., Charlotte, N. C.  
Morris Machine Works, Baldwinville, N. Y.  
Myers & Bros., F. E., Ashland, O.  
Nortyke & Marmon Co., Indianapolis, Ind.  
Reilly Mfg. Co., J. J., Louisville, Ky.  
Snyder Pump & Well Co., Inc., Richmond, Va.  
Union Steam Pump Co., Battle Creek, Mich.  
Wood & Co., R. D., Philadelphia, Pa.  
Worthington, Henry R., Harrison, N. J.

## Pumps. (Boiler Feed.)

Alberger Pump & Condenser Co., New York, N. Y.  
Blakelee Mfg. Co., Du Quoin, Ill.  
Cameron Steam Pump Wks., A. S., New York, N. Y.  
Dean Bros. Steam Pump Wks., Indianapolis, Ind.  
Deane Steam Pump Co., Holyoke, Mass.  
Erie Pump & Engine Works, Erie, Pa.  
Goulds Mfg. Co., Seneca Falls, N. Y.  
Keystone Pump & Well Engine Co., Beaver Falls, Pa.  
Moffatt Machinery Mfg. Co., Charlotte, N. C.  
Morris Machine Works, Baldwinville, N. Y.  
Myers & Bros., F. E., Ashland, O.  
Nortyke & Marmon Co., Indianapolis, Ind.  
Reilly Mfg. Co., J. J., Louisville, Ky.  
Snyder Pump & Well Co., Inc., Richmond, Va.  
Union Steam Pump Co., Battle Creek, Mich.  
Wood & Co., R. D., Philadelphia, Pa.  
Worthington, Henry R., Harrison, N. J.

## Pumps. (Centrifugal.)

Alberger Pump & Condenser Co., New York, N. Y.  
Buffalo Steam Pump Co., Buffalo, N. Y.  
Cameron Steam Pump Wks., A. S., New York, N. Y.  
De Laval Steam Turbine Co., Trenton, N. J.  
Erie Pump & Engine Works, Erie, Pa.  
Jeansville Iron Works Co., Hazleton, Pa.  
Morris Machine Works, Baldwinville, N. Y.  
Nortyke & Marmon Co., Indianapolis, Ind.  
Pacific Flushing Tank Co., New York, N. Y.  
Wood & Co., R. D., Philadelphia, Pa.  
Worthington, Henry R., Harrison, N. J.

## Pumps. (Deep Well.)

Cameron Steam Pump Wks., A. S., New York, N. Y.  
Goulds Mfg. Co., Seneca Falls, N. Y.  
Keystone Pump & Well Engine Co., Beaver Falls, Pa.  
Layne & Bowler Co., Houston, Tex.

## Pumps. (Dredging.)

Buffalo Steam Pump Works, Buffalo, N. Y.  
Dean Bros. Steam Pump Works, Indianapolis, Ind.  
Erie Pump & Engine Works, Erie, Pa.  
Goulds Mfg. Co., Seneca Falls, N. Y.  
Morris Machine Works, Baldwinville, N. Y.  
Nortyke & Marmon Co., Indianapolis, Ind.  
Pacific Flushing Tank Co., New York, N. Y.  
Wood & Co., R. D., Philadelphia, Pa.

## Pumps. (Hydraulic.)

Buffalo Steam Pump Co., Buffalo, N. Y.  
Cameron Steam Pump Wks., A. S., New York, N. Y.  
Cardwell Machine Co., Richmond, Va.  
Dean Bros. Steam Pump Wks., Indianapolis, Ind.  
Erie Pump & Engine Works, Erie, Pa.  
French Oil Mill Mchry. Co., The, Piqua, O.

## Pumps. (Oil and Gasoline.)

Keystone Boiler & Fdry. Co., Columbia, Pa.

## Pumps. (Steam.)

Alberger Pump & Condenser Co., New York, N. Y.  
Blake & Knowles Steam Pump Works, East Cambridge, Mass.  
Blakelee Mfg. Co., Du Quoin, Ill.  
Buffalo Steam Pump Co., Buffalo, N. Y.  
Cameron Steam Pump Wks., A. S., New York, N. Y.  
Cameron & Barkley Co., Charleston, S. C.  
Cotton Air Compressor Works, Cambridge, Mass.  
Cook Well Co., The, St. Louis, Mo.  
Dean Bros. Steam Pump Wks., Indianapolis, Ind.  
Deane Steam Pump Co., Holyoke, Mass.  
Fairbanks-Morse & Co., Atlanta, Ga.  
Keystone Pump & Well Engine Co., Beaver Falls, Pa.  
Murray Iron Works Co., Burlington, Ia.  
Price Machinery Co., S. M., Norfolk, Va.  
Snow Steam Pump Works, The, New York, N. Y.  
Snyder Pump & Well Co., Inc., Richmond, Va.  
Union Steam Pump Co., Battle Creek, Mich.  
Worthington, Henry R., Harrison, N. J.

## Pumps. (Trench.)

Affiliated Manufacturers Co., Milwaukee, Wis.

## Pumps. (Turbine Driven.)

Sturtevant Co., B. F., Hyde Park, Boston, Mass.

## Pumps. (Vacuum.)

Cameron Steam Pump Wks., A. S., New York, N. Y.  
Dean Bros. Steam Pump Wks., Indianapolis, Ind.  
Reilly Mfg. Co., J. J., Louisville, Ky.  
Smith Co., T. L., Atlanta, Ga.  
Union Steam Pump Co., Battle Creek, Mich.

## Pumps. (Water-works.)

Goulds Mfg. Co., Seneca Falls, N. Y.

## Punches and Dies.

American Die & Tool Co., Reading, Pa.

## Punching and Shearing Machinery.

Bertch & Co., Cambridge City, Ind.

Bliss Co., E. W., Brooklyn, N. Y.

## Railroads. [See Industrial, Agricultural and Commercial Opportunities.]

## Railroad Equipment and Supplies. (New and Second-hand.)

American Frog & Switch Co., Hamilton, O.  
American Locomotive Co., New York, N. Y.  
Bailey-Lobby Co., The, Charleston, S. C.  
Birmingham Rail & Loco. Co., Birmingham, Ala.  
Cincinnati Frog & Switch Co., Cincinnati, O.  
Curd, Geo. B., Cincinnati, O.  
Fairbanks-Morse & Co., Atlanta, Ga.  
Foster Co., L. B., Pittsburgh, Pa.  
Georgia Car & Locomotive Co., Atlanta, Ga.  
Grimeshaw, Wm. R., Philadelphia, Pa.  
Hoffman & Co., Inc., R. C., Baltimore, Md.  
Hyde, Chas., Pittsburgh, Pa.  
Kilby Frog & Switch Co., Birmingham, Ala.  
Macleary, J. H., Suffolk, Va.  
National Steel Rail Co., St. Louis, Mo.  
Newhall Eng. Co., Geo. M., Philadelphia, Pa.  
Read Co., Howard W., Philadelphia, Pa.  
Robinson & Orr, Pittsburgh, Pa.  
Sherwood, E. C., New York, N. Y.  
Southern Iron & Equipment Co., Atlanta, Ga.  
Steel Rail Supply Co., The, New York, N. Y.  
Sterling Machinery Co., New York, N. Y.  
United States Rail Co., Cumberland, Md.  
Weir Frog Co., Cincinnati, O.  
Wilson & Co., E. H., Philadelphia, Pa.  
Wilson Mach. Co., Harold R., St. Louis, Mo.  
Zelicker Supply Co., Walter A., St. Louis, Mo.

## Railroad Frogs & Switches.

American Frog & Switch Co., Hamilton, O.  
Cincinnati Frog & Switch Co., Cincinnati, O.  
Conner Frog & Switch Co., Memphis, Tenn.  
Easton Car & Construction Co., Easton, Pa.  
Kilby Frog & Switch Co., Birmingham, Ala.  
Newhall Engineering Co., Geo. M., Philadelphia, Pa.  
Robinson & Orr, Pittsburgh, Pa.  
Sweet's Steel Co., Williamsport, Pa.  
Weir Frog Co., Cincinnati, O.

## Rails. (Steel.)

Carnegie Steel Co., Pittsburgh, Pa.  
Foster Co., L. B., Pittsburgh, Pa.  
Franks, J. E., Atlanta, Ga.  
Hoffman & Co., Inc., R. C., Baltimore, Md.  
Hyde Bros. Steel & Rail Co., Pittsburgh, Pa.  
Hyde, Chas., Pittsburgh, Pa.  
Lackawanna Steel Co., Lackawanna, N. Y.  
Levis & Co., Henry, Philadelphia, Pa.  
Macleary, J. H., Suffolk, Va.  
National Steel Rail Co., St. Louis, Mo.  
Newhall Eng. Co., Geo. M., Philadelphia, Pa.  
Republic Iron & Steel Co., Youngstown, O.  
Robinson & Orr, Pittsburgh, Pa.  
Sherwood, E. C., New York, N. Y.  
Southern Iron & Equipment Co., Atlanta, Ga.  
Steel Rail Supply Co., The, New York, N. Y.  
Sweet's Steel Co., Williamsport, Pa.  
Tennessee Coal, Iron & R. R. Co., B'gh'm, Ala.  
United States Rail Co., Cumberland, Md.  
Wilson & Co., E. H., Philadelphia, Pa.  
Zelicker Supply Co., Walter A., St. Louis, Mo.

## Rail Braces, Crossings, etc. [See R. R. Frogs and Switches.]

## Railings and Grilles. (Brass.)

Newman Mfg. Co., Cincinnati, O.

## Railways. (Industrial.)

Chase Fdry. & Mfg. Co., Columbus, O.  
Cincinnati Frog & Switch Co., Cincinnati, O.  
Easton Car & Construction Co., Easton, Pa.  
Hunt Co., Inc., C. W., West New Brighton, N. Y.  
Link-Belt Co., Nictown (Philadelphia), Pa.

## Rams. (Hydraulic.) [See Hydraulic Ram.]

## Reamers.

American Die & Tool Co., Reading, Pa.  
Morse Twist Drill & Mch. Co., New Bedford, Mass.

## Reeds.

American Supply Co., Providence, R. I.

## Refrigerating Machinery and Apparatus.

Huttman & Cramer Co., The, Detroit, Mich.  
Huntington Machine Co., Wilmington, Del.  
Vilter Mfg. Co., Milwaukee, Wis.  
Vogt Machine Co., Henry, Louisville, Ky.  
York Mfg. Co., York, Pa.

## Reinforcing Bars. [See Concrete Reinforcing Bars.]

## Riveters. (Pneumatic.)

Independent Pneumatic Tool Co., Chicago, Ill.

## Road Machinery.

Austin Bros., Atlanta, Ga.  
Austin-Western Road Mchry. Co., The, Chicago, Ill.  
Buffalo Steam Roller Co., Buffalo, N. Y.  
Erie Machine Shops, Erie, Pa.  
Farquhar Co., Ltd., A. H., York, Pa.  
Gallion Iron Works & Mfg. Co., The, Gallion, Ohio.  
Holt Manufacturing Co., The, Peoria, Ill.  
Huber Mfg. Co., The, Marion, Ohio.  
Kelly Springfield Road Roller Co., Springfield, O.  
Russell Grading Mfg. Co., Minneapolis, Minn.  
Syracuse Chilled Plow Co., Syracuse, N. Y.  
Universal Road Mchry. Co., Kingston, N. Y.  
Western Wheeled Scraper Co., Aurora, Ill.  
Wheeling Mill & Fdry. Co., Wheeling, W. Va.

## Roadmaking Materials.

Austin Bros., Atlanta, Ga.  
Barber Asphalt Paving Co., Philadelphia, Pa.  
Barrett Mfg. Co., Phila., Pa.  
Standard Oil Co., Newark, N. J.  
U. S. Asphalt Refining Co., New York, N. Y.

## Road Rollers. (Steam.)

Austin-Western Road Mchry. Co., The, Chicago, Ill.  
Barber Asphalt Paving Co., The, Buffalo, N. Y.  
Buffalo Steam Roller Co., Buffalo, N. Y.  
Erie Machine Shops, Erie, Pa.  
Huber Mfg. Co., The, Marion, Ohio.  
Kelly Springfield Road Roller Co., Springfield, O.  
Universal Road Mchry. Co., Kingston, N. Y.

## Road Oil.

Gulf Refining Co., Pittsburgh, Pa.  
Standard Oil Co., Inc., Newark, N. J.  
U. S. Asphalt Refining Co., New York, N. Y.

## Road Preservatives.

Barrett Mfg. Co., Philadelphia, Pa.  
Fuley, Sam. E., Atlanta, Ga.  
Gulf Refining Co., Pittsburgh, Pa.  
Standard Oil Co., Inc., Newark, N. J.  
U. S. Asphalt Refining Co., New York, N. Y.

## Road Scarifiers.

Buffalo Steam Roller Co., Buffalo, N. Y.  
Gallion Iron Works & Mfg. Co., The, Gallion, Ohio.  
Huber Mfg. Co., The, Marion, Ohio.

## Rock Crushers. [See Crushers, Rock.]

## Rolls. (Bending and Straightening.)

Bertch & Co., Cambridge City, Ind.

## Roller Covering Supplies.

American Supply Co., Providence, R. I.

## Roofing Caps.

Robertson Steel & Iron Co., W. F., Cincinnati, O.

## Roofing. (Ready Prepared: Felt, Tar, Asbestos, Asphalt.)

American Sheet & Tin Plate Co., Pittsburgh, Pa.  
Asbestos Protected Metal Co., Beaver Falls, Pa.  
Asphalt Ready Roofing Co., New York, N. Y.  
Barber Asphalt Paving Co., Philadelphia, Pa.  
Barrett Mfg. Co., Philadelphia, Pa.  
Cameron & Barkley Co., Charleston, S. C.

## Chesapeake Roofing & Pipe Covering Co., Baltimore, Md.

Jones-Manville Co., H. W., New York, N. Y.

Standard Paint Co., The, New York, N. Y.

## Roofing. (Metal Shingles.) [See Shingles, Metal.]

Cortright Metal Roofing Co., Philadelphia, Pa.  
Edwards Mfg. Co., The, Cincinnati, O.  
Milwaukee Artistic Metal Ceiling Co., Milwaukee, Wis.  
Milwaukee Corrugating Co., Milwaukee, Wis.

## Roofing. (Slate.)

East Bangor Consol. Slate Co., East Bangor, Pa.  
Genuine Bangor Slate Co., Easton, Pa.  
Johnson, E. J., New York, N. Y.

## Roofing and Siding. (Metal.)

American Sheet & Tin Plate Co., Pittsburgh, Pa.  
Asbestos Protected Metal Co., Beaver Falls, Pa.  
Cameron & Barkley Co., Charleston, S. C.  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Edwards Mfg. Co., The, Cincinnati, O.  
Hyndman Roofing Co., Cincinnati, O.  
Milwaukee Artistic Metal Ceiling Co., Milwaukee, Wis.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
New Orleans Roofing & Metal Wks., New Orleans, La.  
Portsmouth Steel Co., Portsmouth, O.  
Southern Sheet & Tin Plate Co., Ashland, Ky.  
Tennessee Metal Culvert Co., Nashville, Tenn.  
Youngstown Sheet & Tube Co., Youngstown, O.

## Ropes. (Manila, Sisal, Hemp, etc.)

American Mfg. Co., Brooklyn, N. Y.  
Broderick & Bacon Rope Co., St. Louis, Mo.  
Columbian Rope Co., Auburn, N. Y.  
Intern'l Cotton Mills, New York, N. Y.  
Plymouth Cordage Co., North Plymouth, Mass.  
St. Louis Cordage Mills, St. Louis, Mo.  
Waterbury Co., New York, N. Y.  
Wood's Sons Co., T. B., Chambersburg, Pa.

## Rope. (Wire.)

Broderick & Bacon Rope Co., St. Louis, Mo.  
Hunt Co., Inc., C. W., West New Brighton, N. Y.  
Waterbury Co., New York, N. Y.

## Rope Drives.

Caldwell & Son, H. W., Chicago, Ill.  
Cresson-Morris Co., Philadelphia, Pa.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
Waterbury Co., New York, N. Y.  
Wood's Sons Co., T. B., Chambersburg, Pa.

## Rubber Goods.

Electric Hose & Rubber Co., Wilmington, Del.  
Eureka Fire Hose Mfg. Co., New York, N. Y.  
Goodyear Tire & Rubber Co., Akron, Ohio.

## Rules. (Steel.)

Lufkin Rule Co., Saginaw, Mich.

## Safety and Vaults.

York Safe & Lock Co., York, Pa.

## Sand.

Arundel Sand & Gravel Co., Baltimore, Md.  
Balfour Quarry Co., Ashby, N. C.  
Hime Sand Co., J. R., Atlanta, Ga.  
Kirkpatrick Sand & Cement Co., Birmingham, Ala.

## Sand. (Foundry.)

Newport Sand Bank Co., Inc., Newport, Ky.

## Sand and Gravel Plant Equipment.

Austin Machinery Co., W. E., Atlanta, Ga.

## Sap Stain Preventive.

Church & Dwight Co., New York, N. Y.

## Sash Chain.

Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.

## Saws.

Gerlach Co., Peter, Cleveland, O.  
Huth Bros. Saw Mfg. Co., Inc., Rochester, N. Y.  
Smith Machine Co., H. B., Smithville, N. J.  
Snyder Pump & Well Co., Inc., Richmond, Va.

## Saws. (Band.)

Smith Machine Co., H. B., Smithville, N. J.

## Saws. (Hack.)

Starrett Co., L. S., Athol, Mass.

## Sawmill Dogs.

Soule Steam Feed Works, Meridian, Miss.

## Sawmills.

Gainesville Iron Works, Gainesville, Ga.  
Gibbs Machinery Co., Inc., Columbia, S. C.  
Knight Mfg. Co., Canton, O.  
Lane Mfg. Co., Montpelier, Vt.

## Sawmill Machinery.

Bailey-Lobby Co., Charleston, S. C.  
Cameron & Barkley Co., Charleston, S. C.  
Chase Turbine Mfg. Co., Orange, Mass.  
Knight Mfg. Co., Canton, O.  
Lane Mfg. Co., Montpelier, Vt.  
Mecklenburg Iron Works, Charlotte, N. C.  
Price Mchry. Co., S. M., Norfolk, Va.  
Schaffel Iron Works, Jackson, Tenn.  
Southern Engine & Boiler Wks., Jackson, Tenn.  
Snyder Pump & Well Co., Inc., Richmond, Va.

## Saw Sharpeners.

Carborundum Co., Niagara Falls, N. Y.

## Saw Sharpeners and Files. (Cotton Gin.)

Carver Cotton Gin Co., East Bridgewater, Mass.

## Scales.

Standard Scale & Supply Co., Pittsburgh, Pa.

## Scales. (Weighing and Counting.)

National Scale Co., Chicago Falls, Mass.

## Screens. (Fly, Window and Door.)

Cincinnati Mfg. Co., Cincinnati, O.

## Screens. (Mining, Stone, etc.)

Converse Co., Inc., F. S., Lestershire, N. Y.  
Erdie Perforating Co., Rochester, N. Y.  
Hendrick Mfg. Co., Carbondale, Pa.  
Jeffrey Mfg. Co., Columbus, O.

## McLanahan-Stone Mach. Co., Hollidaysburg, Pa.

Mundt & Sons, Charles, Jersey City, N. J.

## New Jersey Wire Cloth Co., Trenton, N. J.

## Screenings. (For Concrete and Road Construction.)

American Ballast Co., Knoxville, Tenn.

## Screws. (Machine.)

Progressive Mfg. Co., Torrington, Conn.

## Screws. (Safety Set.)

Allen Manufacturing Co., Inc., Hartford, Conn.

## Searchlights.

Carlisle & Finch Co., The, Cincinnati, Ohio.  
Ft. Wayne Electric Works, Ft. Wayne, Ind.

## Separators. (Dust.)

Buffalo Forge Co., Buffalo, N. Y.

## Separators. (Steam.)

Griscom-Russell Co., New York, N. Y.

## Sewer Flushing Siphons.

Merritt Hydraulics Co., Philadelphia, Pa.

## Sewer Joint Compounds.

Pacific Flushing Tank Co., New York, N. Y.

## Sewer Pipe. (Vitrified.)

Bannon Pipe Co., F., Louisville, Ky.

## Sewer Pipe. (Cast Iron.)

Bibb Sewer Pipe Co., Macon, Ga.

## Blackmer & Post Pipe Co., St. Louis, Mo.

## Canneton Sewer Pipe Co., Canneton, Ind.

Pomona Terra-Cotta Co., Pomona, N. C.

Southern Sewer Pipe Co., Birmingham, Ala.

Stevens Sons Co., H., Macon, Ga



**Steamship Lines.** (Coastwise.)  
Baltimore Steam Packet Co., Baltimore, Md.  
Chesapeake Steamship Co., Baltimore, Md.  
Detroit & Cleveland Navigation Co., Detroit, Mich.  
Merchants & Miners' Trans. Co., Baltimore, Md.

**Steamship Lines.** (Trans Atlantic.)  
Cunard Steamship Co., Ltd., New York, N. Y.

**Steam Shovel Chains.**  
Weimer Chain & Iron Co., Lebanon, Pa.

**Steam Shovels.**  
American Clay Machinery Co., The Bucyrus, Ohio.  
Fairbanks Steam Shovel Co., Marion, O.  
Marion-Osgood Co., Marion, O.  
Marion Steam Shovel Co., Marion, O.  
Sherwood, E. C., New York, N. Y.

**Steam Specialties.**  
Lunkenheimer Co., The Cincinnati, Ohio.  
Powell Co., Wm., Cincinnati, O.

**Steam Traps.**  
Jenkins Bros., New York, N. Y.

**Steel.**  
Carnegie Steel Co., Pittsburgh, Pa.  
Dietrich Bros., Baltimore, Md.  
Gulf States Steel Co., Birmingham, Ala.  
Hoffman & Co., Inc., R. C., Baltimore, Md.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
La Belle Iron Works, Steubenville, O.  
Lackawanna Steel Co., Lackawanna, N. Y.  
Lebanon Valley Iron & Steel Co., Lebanon, Pa.  
Philadelphia Steel & Forge Co., New York, N. Y.  
Portsmouth Steel Co., Portsmouth, Ohio.  
Republic Iron & Steel Co., Youngstown, O.  
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
Upson Nut Co., The Cleveland, O.  
Wood Iron & Steel Co., Alan, Philadelphia, Pa.  
Youngstown Sheet & Tube Co., The Youngstown, O.

**Steel.** (Tool.)  
Bourne-Fuller Co., The Cleveland, Ohio.  
McKenna Bros., Brass Co., Pittsburgh, Pa.

**Steel.** (Vanadium.)  
Carnegie Steel Co., Pittsburgh, Pa.

**Steel Buildings.** (Designers, Builders.)  
Amer. Bridge Co., of New York, N. Y.  
Belmont Iron Works, Philadelphia, Pa.  
Champion Bridge Co., Wilmington, O.  
Chesapeake Iron Works, Baltimore, Md.  
Des Moines Bridge & Iron Co., Des Moines, Ia.  
Phoenix Iron Co., Philadelphia, Pa.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.  
Richmond Structural Steel Co., Richmond, Va.  
Schreiber & Sons Co., The L., Cincinnati, O.  
Snead Architectural Iron Works, Louisville, Ky.  
Turner, C. A. P., Minneapolis, Minn.  
Virginia Bridge & Iron Co., Roanoke, Va.

**Steel Castings.**  
Orucible Steel Castings Co., Lansdowne, Pa.  
Hoffman & Co., Inc., R. C., Baltimore, Md.  
Riverside Steel Casting Co., Newark, N. J.

**Steel Plate Work.**  
Casey-Hedges Co., Chattanooga, Tenn.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Coatesville Boiler Works, Coatesville, Pa.  
Hoffman & Co., Inc., R. C., Baltimore, Md.  
Memphis Steel Construction Co., Memphis, Tenn.  
Phoenix Iron Co., Philadelphia, Pa.  
Struthers-Wells Co., Warren, Pa.

**Steel Protector.** (Concrete Curb, Steps, etc.)  
[See Curb Protector Steel.]

**Steel Sheet Piling.**  
Franks, J. E., Atlanta, Ga.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
Lackawanna Steel Co., Lackawanna, N. Y.

**Stencils.**  
Baltimore Office Supply Co., Baltimore, Md.

**Stills.** (Turpentine.)  
McMillan Bros., Jacksonville, Fla.

**Stirrups.** (Building.)  
Chesapeake Iron Works, Baltimore, Md.

**Stock Certificates, Bonds and Seals.**  
Baltimore Office Supply Co., Baltimore, Md.

**Stokers.** (Hand.)  
Huber Grate Bar & Stoking Co., Baltimore, Md.

**Stokers.** (Mechanical.)  
Babcock & Wilcox Co., New York, N. Y.  
Harrisburg Frdy. & Mach. Wks., Harrisburg, Pa.  
Westinghouse Machine Co., Pittsburgh, Pa.

**Stone.** (Building.)  
Bedford Steam Stone Works, Bedford, Ind.  
Kirkpatrick Sand & Cement Co., Birmingham, Ala.

**Storage Batteries.**  
Elec. Storage Battery Co., The Philadelphia, Pa.  
Westinghouse Machine Co., Pittsburgh, Pa.

**Storage Warehouses.**  
Union Terminal Co., Jacksonville, Fla.

**Structural Steel and Iron.**  
Amer. Bridge Co., of New York, N. Y.  
Belmont Iron Works, Philadelphia, Pa.  
Bourne-Fuller Co., The Cleveland, Ohio  
Carnegie Steel Co., Pittsburgh, Pa.  
Champion Bridge Co., Wilmington, O.  
Chesapeake Iron Works, Baltimore, Md.  
Chickasaw Iron Works, Memphis, Tenn.  
Chicago Bridge & Iron Works, Chicago, Ill.  
Cincinnati Iron & Steel Co., Cincinnati, O.  
Des Moines Bridge & Iron Co., Des Moines, Ia.  
Dietrich Bros., Baltimore, Md.  
East St. Louis Bridge Co., East St. Louis, Ill.  
Easton Car & Construction Co., Easton, Pa.  
Greenspan's Sons Iron & Steel Co., Jos., St. Louis, Mo.  
Hoffman & Co., Inc., R. C., Baltimore, Md.  
Jones & Laughlin Steel Co., Pittsburgh, Pa.  
Lackawanna Steel Co., Lackawanna, N. Y.  
Oregon Bridge Co., Lebanon, Ohio.  
Memphis Steel Construction Co., Memphis, Tenn.  
Phoenix Iron Co., Philadelphia, Pa.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.  
Republic Iron & Steel Co., Youngstown, O.  
Richmond Structural Steel Co., Richmond, Va.  
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.  
Schreiber & Sons Co., The L., Cincinnati, O.  
Snead Architectural Iron Works, Louisville, Ky.  
Southern Sheet & Tin Plate Co., Ashland, Ky.  
Savannah Steel Products Co., Savannah, Ga.  
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
Vincennes Bridge Co., Vincennes, Ind.  
Virginia Bridge & Iron Co., Roanoke, Va.  
Withers Frdy. & Mach. Wks., Atlanta, Ga.

**Stamp Pullers.**  
Zimmerman Steel Co., Lone Tree, Iowa.

**Sulphur.**  
Union Sulphur Co., New York, N. Y.

**Super-Heaters.** (Steam.)  
Babcock & Wilcox Co., New York, N. Y.  
Power Specialty Co., New York, N. Y.

**Surveying Instruments.**  
Weber & Co., F., Philadelphia, Pa.

**Swinging Engines.**  
Dake Engine Co., Grand Haven, Mich.

**Switchboards, Switches, etc.**  
Fort Wayne Electric Works, Fort Wayne, Ind.  
General Electric Co., Schenectady, N. Y.

**Switches.** (See Railroad Frogs and Switches.)

**Switchstands.**  
Weir Frog Co., Cincinnati, O.

**Tackle Blocks.** (For Wire or Manila Rope.)  
Broderick & Bascom Rope Co., St. Louis, Mo.

**Talc and Soapstone Powders.**  
Georgia Talc Co., Ashville, N. C.

**Tanks.** (Iron and Steel.)  
American Bridge Co., New York, N. Y.  
American Water Softener Co., Philadelphia, Pa.  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Casey-Hedges Co., Chattanooga, Tenn.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Chicago Bridge & Iron Works, Chicago, Ill.  
Coatesville Boiler Works, Coatesville, Pa.  
Cole Mfg. Co., R. D., Newnan, Ga.  
Des Moines Bridge & Iron Co., Des Moines, Ia.  
Dixie Culvert & Metal Co., Atlanta, Ga.  
Harry Bros. Co., Newport, Ky.  
Hartley Boiler Works, Montgomery, Ala.  
Keeler Co., E., Williamsport, Pa.  
Keystone Boiler & Foundry Co., Columbia, Pa.  
Lombard Iron Works, Augusta, Ga.  
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.  
Memphis Steel Construction Co., Memphis, Tenn.  
New Orleans Roofing & Metal Wks., New Orleans, La.  
New York Central Iron Wks. Co., Hagerstown, Md.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.  
Schofield Iron Works, Macon, Ga.  
Struthers-Wells Co., Warren, Pa.  
Syndor Pump & Well Co., Inc., Richmond, Va.  
Tennessee Metal Culvert Co., Nashville, Tenn.  
Twin City Boiler Works, Bristol, Va.-Tenn.  
Virginia Bridge & Iron Co., Roanoke, Va.  
Walsh-Weidner Boiler Co., Chattanooga, Tenn.

**Tanks.** (Wood.)  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Davis & Son, G. M., Palatka, Fla.  
Syndor Pump & Well Co., Inc., Richmond, Va.

**Tapes.** (Measuring.)  
Lufkin Rule Co., Saginaw, Mich.  
Starrett Co., L. S., Athol, Mass.

**Telephones.** (Supplies, Equipment.)  
Piedmont Electric Co., Asheville, N. C.  
Western Electric Co., New York, N. Y.

**Telephone Service.**  
American Telephone & Telegraph Co.

**Terminal Warehouse.**  
Union Terminal Co., Jacksonville, Fla.

**Terra-Cotta.** (Ornamental.)  
Atlanta Terra-Cotta Co., Atlanta, Ga.  
Bibb Sewer Pipe Co., Macon, Ga.  
Maryland Terra-Cotta Co., Baltimore, Md.  
Pomona Terra-Cotta Co., Pomona, N. C.  
Southern Building Material Co., Norfolk, Va.  
Stevens' Sons Co., H., Macon, Ga.

**Threshers.**  
Cardwell Machine Co., Richmond, Va.

**Tiering Machines.** (Portable.)  
Economy Engineering Co., Chicago, Ill.

**Tile.** (Drain.)  
Bibb Sewer Pipe Co., Macon, Ga.  
Gray Concrete Co., Thomasville, N. C.  
Oconee Brick & Tile Co., Milledgeville, Ga.

**Tile.** (Interior.)  
Amer. Enam. Brick & Tile Co., New York, N. Y.  
P & F Tile Co., Birmingham, Ala.

**Tile.** (Mantel and Promenade.)  
Hood Brick Co., B. Millin, Atlanta, Ga.

**Tire.** (Rubber.)  
Goodyear Tire & Rubber Co., Akron, O.

**Tire.** (Structural.)  
Bibb Sewer Pipe Co., Macon, Ga.  
Oconee Brick & Tile Co., Milledgeville, Ga.

**Timbers.** (Crescoted.)  
American Crescoted Works, New Orleans, La.  
Republic Crescoting Co., Indianapolis, Ind.

**Tin and Terne Plates.**  
American Sheet & Tin Plate Co., Pittsburgh, Pa.

**Tires.** (Rubber.)  
Goodyear Tire & Rubber Co., Akron, O.

**Tobacco Machinery.**  
Buckeye Iron & Brass Works, Dayton, O.  
Cardwell Machine Co., Richmond, Va.

**Tools.** (Mechanists.)  
American Die & Tool Co., Reading, Pa.  
Holland Mfg. Co., Erie, Pa.  
Morris Twist Drill & Mach. Co., New Bedford, Mass.

**Tools.** (Mechanical.)  
Starrett Co., L. S., Athol, Mass.

**Tools.** (Pneumatic.)  
Amer. Compressor & Pump Co., Baltimore, Md.  
Chicago Pneumatic Tool Co., Chicago, Ill.  
Independent Pneumatic Tool Co., Chicago, Ill.

**Tools.** (Tinner's.)  
Danzon Metal Works, Hagerstown, Md.

**Torches.**  
Wall Mfg. Supply Co., P., Allegheny, Pa.

**Towers.** (Electric Transmission.)  
American Bridge Co., of New York, N. Y.  
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

**Towers.** (Steel and Wood.)  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Chicago Bridge & Iron Works, Chicago, Ill.  
Cole Mfg. Co., R. D., Newnan, Ga.  
Columbia Pump & Well Co., Washington, D. C.  
Des Moines Bridge & Iron Co., Des Moines, Ia.  
Memphis Steel Const. Co., Memphis, Tenn.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

**Track Material.** (Steam & Industrial Railroads.)  
Conley Frog & Switch Co., Memphis, Tenn.

**Traction Engines.**  
Fairbanks-Morse & Co., Atlanta, Ga.  
Farquhar Co., Ltd., A. B., York, Pa.  
Heer Engine Co., Portsmouth, O.  
Holt Mfg. Co., The Peoria, Ill.  
Huber Mfg. Co., The Marion, O.

**Tramway.** (Overhead.)  
Spideal, J. G., Reading, Pa.

**Tramway.** (Wire Rope.)  
American Steel & Wire Co., Chicago, Ill.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
Caldwell & Sons Co., H. W., Chicago, Ill.  
Link-Belt Co., Nicetown (Philadelphia), Pa.  
Waterbury Co., New York, N. Y.

**Transformers.**  
Crocker-Wheeler Co., Ampere, N. J.

**Trench Excavator.** [See Excavator (Trench.)]

**Trucks.** (Dry Kiln.)  
Moore Dry Kiln Co., L., Jacksonville, Fla.

**Trucks.** (Elevating for Factories, etc.)  
National Scale Co., Chicopee Falls, Mass.

**Trucks.** (Motor, Gasoline.)  
White Co., The Cleveland, O.

**Trucks.** (Platform, Freight, Mill, Factory, etc.)  
Bernstein Mfg. Co., Phila., Pa.  
Chase Frdy. & Mfg. Co., Columbus, O.

**Trucks.** (Storage Battery Auto.)  
Westinghouse Machine Co., Pittsburgh, Pa.

**Trucks.** (Storage Battery) [For Warehouses & Industrial Plants]  
Elwell Parker Electric Co., The New York, N. Y.

**Trust Companies.** [See Bankers and Brokers.]

**Tube Well Strainers.**  
Cook Well Co., St. Louis, Mo.

**Tubes.** (Boiler.)  
Cincinnati Iron & Steel Co., Cincinnati, O.  
National Tube Co., Pittsburgh, Pa.

**Tubing.**  
La Belle Iron Works, Steubenville, O.  
National Tube Co., Youngstown, O.  
Youngstown Sheet & Tube Co., Youngstown, O.

**Turbines.** (Hydraulic.)  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Davis Foundry & Machine Wks., Rome, Ga.  
Leffel & Co., James, Springfield, O.  
Pope Engineering & Mach. Co., Baltimore, Md.  
Salem Foundry & Machine Wks., Salem, Va.  
Smith Co., S. Morgan, York, Pa.

**Turbines.** (Steam.)  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
De Laval Steam Turbine Co., Trenton, N. J.  
Ft. Wayne Electric Works, Ft. Wayne, Ind.  
General Electric Co., Schenectady, N. Y.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.  
Terry Steam Turbine Co., Hartford, Conn.  
Western Electric Co., New York, N. Y.  
Westinghouse Machine Co., Pittsburgh, Pa.

**Turn Buckles.**  
Broderick & Bascom Rope Co., St. Louis, Mo.

**Wall Ties.**  
Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.  
Page Woven Wire Fence Co., Adrian, Mich.

**Warehouse.** (Storage.)  
Union Terminal Co., Jacksonville, Fla.

**Washers.** (Ore and Phosphate.)  
Bailey-Lobby Co., Charleston, S. C.  
Cameron & Barkley Co., Charleston, S. C.  
McLanahan-Stone Mach. Co., Hollidaysburg, Pa.

**Washers and Rivets.** [See Bolts, Nuts, Rivets, Studs and Washers.]

**Watchman's Clocks.**  
Watchman's Clock & Supply Co., New York, N. Y.

**Water Filters.** (See Filters, Water, etc.)

**Waterproofing.** (For Brick Work.)  
Barrett Mfg. Co., Philadelphia, Pa.  
McCormick Waterproof Portland Cement Co., St. Louis, Mo.  
Standard Paint Co., The New York, N. Y.

**Waterproofing.** (For Concrete.)  
Barrett Mfg. Co., Philadelphia, Pa.  
McCormick Waterproof Portland Cement Co., St. Louis, Mo.  
Standard Paint Co., The New York, N. Y.

**Water-Softening Apparatus.** (Purifying.)  
American Water Softener Co., Philadelphia, Pa.  
International Filter Co., Chicago, Ill.  
N. Y. Cont. Jewell Filter Co., New York, N. Y.  
Tucker & Laxton, Charlotte, N. C.

**Water-Wheels.** [See Turbines. (Hydraulic.)]

**Water-Works Supplies and Appliances.**  
American Cast Iron Pipe Co., Birmingham, Ala.  
American Pipe & Constr. Co., Philadelphia, Pa.  
Bourbon Copper & Brass Wks. Co., Cincinnati, O.  
Clark Co., H. W., Mattoon, Ill.  
Clow & Sons, James B., Chicago, Ill.  
Coidwell-Wilcox Co., Newburgh, N. Y.  
Columbian Iron Works, Chattanooga, Tenn.  
Donaldson Iron Co., Emaus, Pa.  
Glanorgan Pipe & Foundry Co., Lynchburg, Va.  
Keystone Pump & Well Engine Co., Beaver Falls, Pa.  
Layne & Bowler Co., Houston, Tex.  
Leadite Co., Inc., The Philadelphia, Pa.  
Lynchburg Foundry Co., Lynchburg, Va.  
Mason Iron & Steel Co., Massillon, Ohio.  
Modern Equipment Co., Savannah, Ga.  
Pomona Terra-Cotta Co., Pomona, N. C.  
Salem Frdy. & Machine Works, Salem, Va.  
Standard Cast Iron Pipe & Foundry Co., Bristol, Pa.  
Standard Spiral Pipe Works, Chicago, Ill.  
Stevens' Sons Co., H., Macon, Ga.  
U. S. Cast Iron Pipe & Frdy. Co., Burlington, N. J.  
Warren Foundry & Machine Co., New York, N. Y.  
Weston Co., A. H., Charlotte, N. C.  
Wood & Co., R. D., Philadelphia, Pa.

**Welding Plants.** (Oxy-Acetylene.)  
Milburn Co., Alex. N., Baltimore, Md.

**Well Contractors.** (Oil, Artesian, etc.)  
Columbia Pump & Well Co., Washington, D. C.  
Cook Well Co., The St. Louis, Mo.  
Hutches Specialty Well Drill Co., Charleston, S. C.  
Lee Bros. & Greer, Spartanburg, S. C.  
Stothoff Bros., Flemington, N. J.  
Syndor Pump & Well Co., Inc., Richmond, Va.

**Well Tools and Supplies.**  
Cook Well Co., The St. Louis, Mo.  
Keystone Pump & Well Engine Co., Beaver Falls, Pa.  
Williams Bros., Ithaca, N. Y.

**Wheels and Axles.**  
Electric Wheel Co., Quincy, Ill.  
Oliver Mfg. Co., W. J., Knoxville, Tenn.

**Wheelbarrows and Carts.**  
Sterling Wheelbarrow Co., Milwaukee, Wis.  
Syracuse Chilled Plow Co., Syracuse, N. Y.

**Wheels.** (Steel and Steel Tired.)  
Carnegie Steel Co., Pittsburgh, Pa.

**Window Frames and Sash.** (Fireproof.)  
Detroit Steel Products Co., Detroit, Mich.  
Edwards Mfg. Co., The Cincinnati, O.  
Voigtman & Co., Chicago, Ill.

**Window Guards.** (Wire.) [See Wire Goods.]

**Windmills.**  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Columbia Pump & Well Co., Washington, D. C.

**Wire.** (Barbed Wire, etc.)  
American Steel & Wire Co., Chicago, Ill.  
Roebling's Sons Co., John A., Trenton, N. J.  
Youngstown Sheet & Tube Co., Youngstown, O.

**Wire.** (Signal.)  
Safety Insulated Wire & Cable Co., New York, N. Y.

**Wire Cloth.** (Iron, Steel, Brass, etc.)  
American Steel & Wire Co., Chicago, Ill.  
Aronson Co., L., Columbia, S. C.  
Caldwell & Sons Co., The H. W., Chicago, Ill.  
Meyers Mfg. Co., The Fred J., Hamilton, O.  
New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Goods.**  
Boiles Iron & Wire Wks., J. E., Detroit, Mich.  
Cincinnati Mfg. Co., Cincinnati, O.  
Dow Wire & Iron Works, Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
Dufur, Baggett & Co., Baltimore, Md.  
Meyers Mfg. Co., The Fred J., Hamilton, O.  
New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Netting.**  
American Steel & Wire Co., Chicago, Ill.  
New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Rods.**  
American Steel & Wire Co., Chicago, Ill.

**Wire Rope.**  
American Steel & Wire Co., Chicago, Ill.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
Roebling's Sons Co., John A., Trenton, N. J.  
Waterbury Co., New York, N. Y.  
Williamsport Wire Rope Co., Williamsport, Pa.  
Youngstown Sheet & Tube Co., Youngstown, O.

**Wire Rope Clips.**  
American Hoist & Derrick Co., St. Paul, Minn.  
Broderick & Bascom Rope Co., St. Louis, Mo.

**Wires and Cables.** (Insulated.)  
Safety Insulated Wire & Cable Co., New York, N. Y.

**Wood Blocks.** (For Paving and Factory Floors.)  
U. S. Wood Preserving Co., New York, N. Y.

**Wood Distillation.**  
Struthers-Wells Co., Warren, Pa.

**Wood Pipe.** (For Water, etc.)  
Wyckoff & Son Co., A., Elmira, N. Y.

**Woodworking Machinery.**  
Gibbs Mach. Co., Inc., Columbia, S. C.  
Kline, Lewis T., Alpena, Mich.  
Lane Mfg. Co., Montpelier, Vt.  
Shimer & Sons, Samuel J., Milton, Pa.  
Sidney Tool Co., The Sidney, Ohio.  
Smith Machine Co., H. B., Smithville, N. J.

**Yarn.** (Tarred Steel.)  
Columbian Rope Co., Auburn, N. Y.  
Plymouth Cordage Co., North Plymouth, Mass.

## Important Information For Advertisers in Manufacturers Record

Publication day—Every Thursday.  
Advertising copy not requiring proof must reach us one week in advance of publication day.  
When proof is required, two weeks in advance.  
Width of column, 2 1/4 inches; length, 13 inches.  
Four columns to page.

### TYPOGRAPHICAL ARRANGEMENT

We desire to use, as far as possible, uniform display type and borders and avoid the use of black background cuts. The uniform border is two-point plain rule for all spaces less than a full page.  
Copy for advertisements other than those to be used in special departments should be prepared for two-column measure for spaces less than a quarter page; for a quarter page or larger, in two or four columns.

**Tire.** (Rubber.)  
Goodyear Tire & Rubber Co., Akron, O.

**Tire.** (Structural.)  
Bibb Sewer Pipe Co., Macon, Ga.  
Oconee Brick & Tile Co., Milledgeville, Ga.

**Timbers.** (Crescoted.)  
American Crescoted Works, New Orleans, La.  
Republic Crescoting Co., Indianapolis, Ind.

**Tin and Terne Plates.**  
American Sheet & Tin Plate Co., Pittsburgh, Pa.

**Tires.** (Rubber.)  
Goodyear Tire & Rubber Co., Akron, O.

**Tobacco Machinery.**  
Buckeye Iron & Brass Works, Dayton, O.  
Cardwell Machine Co., Richmond, Va.

**Tools.** (Mechanists.)  
American Die & Tool Co., Reading, Pa.  
Holland Mfg. Co., Erie, Pa.  
Morris Twist Drill & Mach. Co., New Bedford, Mass.

**Tools.** (Mechanical.)  
Starrett Co., L. S., Athol, Mass.

**Tools.** (Pneumatic.)  
Amer. Compressor & Pump Co., Baltimore, Md.  
Chicago Pneumatic Tool Co., Chicago, Ill.  
Independent Pneumatic Tool Co., Chicago, Ill.

**Tools.** (Tinner's.)  
Danzon Metal Works, Hagerstown, Md.

**Torches.**  
Wall Mfg. Supply Co., P., Allegheny, Pa.

**Towers.** (Electric Transmission.)  
American Bridge Co., of New York, N. Y.  
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

**Towers.** (Steel and Wood.)  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Chicago Bridge & Iron Works, Chicago, Ill.  
Cole Mfg. Co., R. D., Newnan, Ga.  
Columbia Pump & Well Co., Washington, D. C.  
Des Moines Bridge & Iron Co., Des Moines, Ia.  
Memphis Steel Const. Co., Memphis, Tenn.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

**Track Material.** (Steam & Industrial Railroads.)  
Conley Frog & Switch Co., Memphis, Tenn.

**Traction Engines.**  
Fairbanks-Morse & Co., Atlanta, Ga.  
Farquhar Co., Ltd., A. B., York, Pa.  
Heer Engine Co., Portsmouth, O.  
Holt Mfg. Co., The Peoria, Ill.  
Huber Mfg. Co., The Marion, O.

**Turntables.**  
American Bridge Co., New York, N. Y.  
Easton Car & Construction Co., Easton, Pa.  
Virginia Bridge & Iron Co., Roanoke, Va.

**Twine.**  
Columbian Rope Co., Auburn, N. Y.  
Intern'l Cotton Mills, New York, N. Y.  
Plymouth Cordage Co., North Plymouth, Mass.

**Unions.**  
Dart Mfg. Co., E. M., Providence, R. I.  
National Tube Co., Pittsburgh, Pa.

**Vacuum Cleaning Apparatus.**  
King Co., F. E., Norfolk, Va.  
United Electric Co., The Canton, O.

**Valves.**  
Bourbon Copper & Brass Wks. Co., Cincinnati, O.  
Columbian Iron Works, Chattanooga, Tenn.  
Frick Co., The Waynesboro, Pa.  
Glanorgan Pipe & Frdy Co., Lynchburg, Va.  
Ide & Sons, A. L., Springfield, Ill.  
Jenkins Bros., New York, N. Y.  
Lunkenheimer Co., The Cincinnati, O.  
National Tube Co., Pittsburgh, Pa.  
Powell Co., Wm., Cincinnati, O.  
Pittsburgh Valve Frdy. & Const. Co., Pittsburgh, Pa.  
York Mfg. Co., York, Pa.

**Valve Boxes.**  
Clark Co., H. W., Mattoon, Ill.

**Varnish.**  
Berry Bros., Detroit, Mich.  
Murphy Varnish Co., Newark, N. J.

**Veneer Machines.**  
Titus, E. E., Petersburg, Va.

**Ventilating Apparatus.** (Engineers' and Contractors.)  
Buffalo Forge Co., Buffalo, N. Y.  
Sturtevant Co., B. F., Hyde Park, Boston, Mass.

**Ventilating and Heating.**  
Crook-Kries Co., Baltimore, Md.

**Vises.**  
Holland Mfg. Co., Erie, Pa.

**Wagons.** (Dump.)  
Troy Wagon Works Co., The Troy, O.  
Western Wheeled Scraper Co., Aurora, Ill.

**Wainscoting.** (Tile.)  
Northcross Mantel Co., W. J., Memphis, Tenn.

**Wall Coping.**  
Southern Sewer Pipe Co., Birmingham, Ala.

**Wall Plugs.** (Galvanized.)  
Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.

**Wire.** (Barbed Wire, etc.)  
American Steel & Wire Co., Chicago, Ill.  
Roebling's Sons Co., John A., Trenton, N. J.  
Youngstown Sheet & Tube Co., Youngstown, O.

**Wire.** (Signal.)  
Safety Insulated Wire & Cable Co., New York, N. Y.

**Wire Cloth.** (Iron, Steel, Brass, etc.)  
American Steel & Wire Co., Chicago, Ill.  
Aronson Co., L., Columbia, S. C.  
Caldwell & Sons Co., The H. W., Chicago, Ill.  
Meyers Mfg. Co., The Fred J., Hamilton, O.  
New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Goods.**  
Boiles Iron & Wire Wks., J. E., Detroit, Mich.  
Cincinnati Mfg. Co., Cincinnati, O.  
Dow Wire & Iron Works, Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
Dufur, Baggett & Co., Baltimore, Md.  
Meyers Mfg. Co., The Fred J., Hamilton, O.  
New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Netting.**  
American Steel & Wire Co., Chicago, Ill.  
New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Rods.**  
American Steel & Wire Co., Chicago, Ill.

**Wire Rope.**  
American Steel & Wire Co., Chicago, Ill.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
Roebling's Sons Co., John A., Trenton, N. J.  
Waterbury Co., New York, N. Y.  
Williamsport Wire Rope Co., Williamsport, Pa.  
Youngstown Sheet & Tube Co., Youngstown, O.

**Wire Rope Clips.**  
American Hoist & Derrick Co., St. Paul, Minn.  
Broderick & Bascom Rope Co., St. Louis, Mo.

**Wires and Cables.** (Insulated.)  
Safety Insulated Wire & Cable Co., New York, N. Y.

**Wood Blocks.** (For Paving and Factory Floors.)  
U. S. Wood Preserving Co., New York, N. Y.

**Wood Distillation.**  
Struthers-Wells Co., Warren, Pa.

**Wood Pipe.** (For Water, etc.)  
Wyckoff & Son Co., A., Elmira, N. Y.

**Woodworking Machinery.**  
Gibbs Mach. Co., Inc., Columbia, S. C.  
Kline, Lewis T., Alpena, Mich.  
Lane Mfg. Co., Montpelier, Vt.  
Shimer & Sons, Samuel J., Milton, Pa.  
Sidney Tool Co., The Sidney, Ohio.  
Smith Machine Co., H. B., Smithville, N. J.

**Yarn.** (Tarred Steel.)  
Columbian Rope Co., Auburn, N. Y.  
Plymouth Cordage Co., North Plymouth, Mass.



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Albany Lubricating Co.	1	Chattanooga Quarry & Const. Co.	26	Frick Co.	16	Kosmos Portland Cement Co., Inc.	21	Paulson, Linkroom & Co.	63	Steel Rail Supply Co.	14
Alberger Pump & Condenser Co.	90	Chattanooga Roofing & Belting Co.	107	Fuller-Coutt Co.	16	Lacade Steel Co.	21	Paxon Co., J. W.	32	Steele & Sons, J. C.	17
Allen American Manganese Steel Co., Edgar	13	Chicago Bridge & Iron Wks.	11	Gade Excavating Co.	78	Lackawanna Steel Co.	23	Peabody, Houghling & Co.	61	Stelmox, C. H.	17
Allen Mfg. Co., Inc.	13	Chicago Pneumatic Tool Co.	1	Gainesville Iron Works	82	Laidlaw Steel Co.	21	Perkins Engr. Co., Edmund T.	16	Sterling Wheelbarrow Co.	21
Allis-Chalmers Mfg. Co.	13	Chicago Saw Iron Works	1	Gainesville Signal Oil Co.	82	Lane Mfg. Co.	87	Pew, Arthur	16	Stevens & Sons, C. H.	15
Alsting Engineering Co., J. H.	92	Chickamauga Quarry & Const. Co.	26	Gallion Iron Wks. & Mfg. Co.	84	Larson & Co., F. J.	87	Phannmuller Engineering Company	72	Stevens, Harry	15
Aluminum Co. of America	6	Chickasaw Iron Works	26	Gandy Belting Co.	14	Lea Bros. & Greer	32	Phoenix Iron Co.	27	Stewart Heater Co., The	1
American Ballast Co.	80	Chickasaw Mfg. Co.	26	General Electric Co.	1	Lebanon Valley Iron & Steel Co.	32	Phoenix Iron Works Co.	32	St. Louis Cordage Mills	15
American Blower Co.	31	Chickasaw Steel Co.	26	General Vehicle Co.	33	Lee Electric Co.	32	Piedmont Electric Co.	32	Stone & Webster Eng. Corp.	17
American Bridge Co. of New York	26	Chickasaw Steel Works	26	General Vehicle Co.	33	Leffell & Co., James	61	Piedmont Electric Co.	32	Stothoff Bros.	17
American Cast Iron Pipe Co.	86	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Stroudsburg Engine Works	72
American Cast Iron Pipe Co.	86	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Strumens-Wells Co., S. L.	11
American Compressor & Pump Co.	76	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Sturtevant Co., B. F.	33
American Cotton Seed Co.	91	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Summers & Co., L. L.	16
American Crocote Works	93	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Sweet's Steel Co.	74
American Die & Tool Co.	13	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Sydor Pump & Well Co., Inc.	74
American Electric Mch. & Elevator Co.	29	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32	Syracuse Chilled Flow Co., Inc.	1
Amer. Engr. Bridge & Tile Co.	29	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Frog & Switch Co.	75	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Hoist & Derrick Co.	75	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Locomotive Co.	15	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Machine Co.	15	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Mfg. Co.	71	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Mfg. & Refining Co.	71	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Amer. Pipe & Concrete Co.	80	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Process Co.	92	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Railway Co.	92	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
American Steel Bridge Co.	92	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Amer. Sheet & Tin Plate Co.	90	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
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American Steel & Wire Co.	25	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
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Arco Culvert Publicity Bureau	1	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Arnold Co., The	16	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Arnstam Co., L.	16	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Arundel Sand & Gravel Co.	80	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
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Asphalt Ready Roofing Co.	1	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Assets Purchasing Co.	72	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Atlanta, Birmingham & Atlantic R. R.	94	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Atlanta Terra Cotta Co.	29	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Atlanta & West Point R. R.	94	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Atlas Machine Co.	1	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Atlas Metal Works	85	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Atlas Powder Co.	1	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Austin Mfg. Co.	27	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Austin Mfg. Co., W. E.	27	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Austin Western Road Mch. Co.	75	Chickasaw Steel Works	26	Georgia Car & Loco. Co.	74	Leffell & Co., James	61	Piedmont Electric Co.	32		
Babcock & Wilcox Co.	9	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Badger & Sons Co., E. H.	9	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Baldwin Locomotive Works	10	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Balfour & Sons Co.	76	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Ball Engine Co.	4	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
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Baltimore Audit Co.	1	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
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Baltimore Steam Packet Co.	107	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
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Barber Asphalt Paving Co.	80	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Barnett Co., G. & H.	108	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Barrett Mfg. Co.	1	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bartlett & Snow Co., C. O.	92	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Baylis, John R.	16	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
B. E. S. Engr. Co.	17	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Beaman, R. J.	63	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bedford Steel Works	26	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Belmont Iron Works	26	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Berkman, P. J.	16	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
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Birmingham Rail & Loco. Co.	1	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Blair & Drane	16	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Blackmer & Post Pipe Co.	34	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Blake & Knowles Steam Pump Works	1	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Blacklee Mfg. Co.	1	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bliss Co., E. W.	2	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Blounts Mfg. Co.	22	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bolinders Co., The	4	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bolles Iron & Wire Works, J. E.	107	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Boomer & Buehler Foundry Co.	107	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bourbon Copper & Brass Wks. Co.	87	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Boyd Cont. Co.	74	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bourne-Fuller Co.	21	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Boyd, George & Co.	1	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bread, Elliott & Harrison	63	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Broderick & Bascom Rope Mfg. Co.	34	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Brookhaven Pressed Brick & Mfg. Co.	28	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Brown & Clarkson Works	17	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bryant, A. Glauco	17	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Buchanan, C. G., Co., Inc.	92	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Buckeye Iron & Brass Works	91	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Buffalo Forge Co.	33	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Buffalo Steam Pump Co.	33	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Buffalo Steam Roller Co.	82	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Bullders' Exchange, Baltimore	82	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Burr & Son, John T.	91	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Burroughs & Adams Mch. Co.	91	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Burruss Engineering Co.	91	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Byers Co., A. M.	77	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Byers Machine Co., John F.	77	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27
Byrd Bros.	72	Dabney Engr. Co.	16	Dale Engr. Co.	16	Dart Metal Co.	27	Dart Metal Co.	27	Dart Metal Co.	27









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